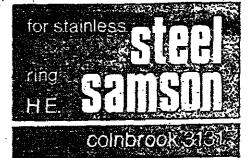
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NEWS SUMMARY

GENERAL

BUSINESS

The accord was reached after

15 hour talks on the 41-day-old

strike, which has so far cost the

country DM 600m (£161m).

The settlement covers pay in-

based on a 40-hour working

To that extent, the key de-

mand for a move towards a

35-hour working week by IG-

Metall, the steelworkers' union.

may be seen by some union

BL foundry

plan attacked

• BL COMPONENTS' an-

nouncement last night that it is pressing ahead with a £24.7m

plan to build an aluminium

foundry on a 25-acre site at West Yorkshire Foundries,

Leeds, was met with an outcry

the company will still meet 40

per cent of its block and

cylinder needs from private companies the Light Metal Founders Association said the move could jeogardise £100m of

• GOVERNMENT is to be neged to help improve the quality of product design in Pates Andus

try by insisting on high standards from companies with which it deals. The proposals

director of Standard Telephones

its chemicals industry. The CJB

award was achieved against

strong competition from Unde-

Mitsui of Japan. Back Page

ANNUAL rate of retail

inflation is likely to have

remained within the range of

8 per cent last month, figures

to be debated tomorrow by a sub-committee of the Coal

Industry Tri-partite group, chaired by Mr. Anthon Wedg-

wood Benn, Energy Secretary.

NEXT Finance Bill may con fain lax relief for companies on

after promises from Treasury Ministers. Back Page

SHELL NEDERLAND reports

an improvement in refinery

and Trading Group is experi-

activities in Holland for the

COMPANIES

expected to show. Page 4

to be published this week are

• UK PROCESS plant

In spite of BL assurances that

from the private sector.

planned investment

es and free time, but is

Top oil German steel groups peace sued likely by U.S. • WEST GERMAN steel strike

day, following an agreement Nine major oil companies are being taken to court by the U.S. for alleged overcharging between employer and trade union representatives. But there are hardles to be cleared before amounting to at least \$1bn. The return to work specomes companies include Exxon, Mobil and Texaco.

The suit, filed in Washington's district court by the U.S. Justice and Energy Departments, alleges that the companies breached Federal pricing panies oreanned recera pricing regulations on natural gas liquids. It says they inflated prices in dealings among subsidiaries and set an artificially high market value.

This is the latest move in a

campaign to clear up what the authorities say are illegal pric-ing practices stretching back to the 1973 Aratr oil embargo. The other companies named are Gulf Amoco, Atlantic Richfield, Shell, Phillips and Cities Services. Back Page

Army warned

King Juan Carlos of Spain gave an unprecedented call to order when he told chiefs of the armed forces that once an army lost its sense of discpline it ceased to be an army. His remarks followed the funeral of Madrid's assassmated military governor, at which some army officers shouted anti-government slogans. Page 2

Tanker verdict

Portugal will decide today Portugal will decide today whether or, not to allow the crippled Greek tanker andre Patria into the port of Listave for repairs. The decision is likely to rest pure the decision in the transferred from the tanker outside.

Uister call

freland's Foreign Minister Michael O'Kennedy has urged Minister and Cables. Back Page initiative in an effort to break the stalemate in Ulster. The call is seen as a new step in Irish policy. Page 4

Thawing out

Most of the UK was thawing out after a week of snowbound-misery, but British Airways had to cancel four international flights out of London Heathrow at the weekend because baggage elevators bad frozen up. Forecast, Back Page

Peru strike

Army units and riot police Talks on coal moved into position in Lima, Peru, and provincial centres ahead of the Communist-led (2-hour general strike due to rutture of the South Wales tart tomorrow. A state of coal industry, which lost £30m emergency has been declared last year and is expected to lose and martial last jungoled Page 2 at least as much this year, is to be debated tomorrow by a

Beirut attack

I wo people were wounded and Industry several houses tangle for when chaired by nembers of the mainly Syrian wood Ben seace keeping force opened fire Page 5 on Christian militias in Lebanon.

Kennedy wanted

I'wo opinion polls published by the Los Angeles Times suggest that voters would prefer Senator Edward Kennedy to President Carter as the Democrats' Presidential candidate next year.

Brunel and the UK signed a treaty giving the sultanate independence by 1983. Alabama Governor George Wallace, who leaves office pext week, said goodbye to sop chemicals division. Page 29

porters at a rally in Most - CENTRAL Manufacturing First of the new 175,000 weekly, encing growing demand for to mark the deaths Premium Bond prizes goes to products, according to Mr. Nor protests last week the Barnet, London, holder, of man Bickman, chairman. Page. There were fears

13ZW 662815,

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echnical page	Foreign Exchanges	29

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The Iranian Crisis: Its Effects on British Cas. 10 The Struggle to Avert Venice from decrept-

The Parole Board

Air France: Era of Mass Transport and Cheap

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Ministers meet on lorry strike's pay policy implications

BY NICK GARNETT & ELINOR GOODMAN

As the private-haulage lorry drivers' strike spreads to more areas today. Ministers in two Cabinet committees meet to discuss the effect of the dispute on pay policy, and on supplies to industry and shops.

a State of Emergency at this

stage. though it would review the over-The stoppage, now hitting all position, no improvement on industrial production in some the offers was planned.

The association's West Midareas, is being extended today to South Wales and the Eastern Counties. There will be tightenparts of the Midlands and North. An "emergency centre" at the ng and acting on inquiries from the food, farming and fish-

ing industries, which face the most severe immediate effect of The National Farmers' Union is holding an emergency meeting the assess the extent to which animal feed supplies are

Disruption to cargo-handling in some major dock areas, in-cluding north Humberside, Liverpool and Tilbury, is likely to be extended to smaller ports. Picketing by drivers on industrial sites is expected to be re-inforced on south Humberside and in the West Midlands, including Wolverhampton. Senior negotiators for separ-

The Government declared Association, which has had its yesterday, bowever, that there was no question of introducing jetted, meet in London today. association said that

The association's West Midlands region has reached agreement with union officials but the settlement simply involves a commitment on the part of employers to fix new pay rates and North London, have been Ministry of Agriculture begins at the highest general level the most severely affected by a operations this morning collect-reached at negotiations in other combination of picketing and reached at negotiations in other regions.

Some unofficial picketing is expected to continue in the area where the strike has been poorly supported. In the oil delivery dispute four of the five main companies were still optimistic that their drivers would accept offers

worth 12 to 15 per cent. Shop stewards for drivers at Esso and Shell meet today. British Petroleum stewards tomorrow and Mobil later in the

A decision to accept would isolate the 1,100 Texaco tankerdrivers and ancillary workers who have rejected 15 per cent, and whose picketing of other companies' depots has curtailed ate regions of the Road Haulage petrol deliveries.

Mr. Moss Evans, general secretary of the Transport and General Workers' Union, which represents the drivers, criticised the Texaco men for taking unoifficial action and said they should abide by any decision to accept the offers at other com-

Ulster. where almost all filling stations have run dry, Manchester and the North-West, unofficial action by tankerdrivers at other companies.

Some BP drivers in the Midlands, including those at the important Kingsbury depot which feeds Shell, came out unofficially at the week-end. The General Cabinet Commit-

tee, chaired by Mr. Merlyn Rees, has been meeting regularly since before Christmas preparing contingency plans in the event of a national tanker drivers' strike.

In a separate meeting of the Cabinet committee dealing with pay policy. Ministers will review what has happened since they last met before Christmas. Yesterday there seemed a

flicker of optimism among some

Continued on Back Page

West agrees China must not affect detente

By RICHARD EVANS AND ROBERT MAUTHNER IN GUADALOUPE

are contained in a report by Mr. Kenneth Corfield managing ensure that developing economic the West and China and the Soviet Union.

facturer, Constructors John Brown, has won a £26m contract to build a petrochemicals plant for China, currently expanding This, fogether with outspoken European support for a SALT 2 agreement, was the most significant outcome of what appears to have been a successful attempt to maintain and improve a common front between President Carter, Hoechst of West Germany and President Giscard d'Estaing, Chancellor Schmidt and Prime Minister Callaghan on political and security issues affecting the

President Carter, summing up his view of the wide-ranging discussions on the French Caribbean island, said the U.S. Government was determined to support the emergence of China as a world power but this must not be allowed to become an

obstacle to detente. And Mr. Callaghan stressed that the relationship between the West and the Soviet Union remained central to the security-

of Western Europe. -Chancellor Schmidt, although not opposing the prospective Franco-British arms sales, in-

cluding the vertical take-off

WESTERN LEADERS agreed at against too much euphoria in French nuclear forces should the two-day summit here to the opening of relations between be thrown into the negotiations.

relationship between the West lar, dominated the summit, a nuclear independence. concensus was reached on a range of issues including Iran, Turkey and Southern Africa.

It was decided it was essential to pump financial aid rapidly Turkey to support the crumbling economy of a country on NATO's vital eastern

None of the four leaders gave any indication of support for the Shah of Iran and President Carter and Mr. Callaghan had an hour's talk on Rhodesia.

The Americans were particu-European leaders to the conclu-SALT negotiations. There appeared to be a concerted move to try to persuade the U.S. Senate to ratify SALT as pleted by President Carter and

Mr. Brezhnev, the Soviet leader. The prospect that SALT 3 will deal with the reduction of strategic arms aimed specifically at European targets will almost certainly lead the Soviet Union Harrier jet, sounded a warning to demand that the British and

The U.S. will face strong oppoand political contacts with China Although security matters, sition from France which is unmisting not affect the crucial and the SALT talks in particular willing to allow any district of relationship between the West The French claim that the

British position on the subject is very close to their own, but there were strong indications here that Mr. Callaghan had taken a more flexible line. As far as Britain is concerned. much will depend on the extent to which the Soviet Union is prepared to accept limitations on the number of its new powerful SS-20 missiles and Backfire bombers which have been developed for use against

Western European targets. During the discussions on dislarly relieved at the strength of armament, President Giscard's support given by the three proposal for a Europe-wide disarmament conference covering sion and early ratification of the conventional weapons, received a mixed reception.

President Carter, Mr. Callaghan and Herr Schmidt emphasised that they wanted to press soon as negotiations are com- ahead with the current mutual and balanced force reduction talks (MBFR), from which the French have stood aside. Mr. Callaghan nevertheless said that M. Giscard's proposal was interesting and worthy of study. The Guadeloupe Summit Page 2

Editorial Comment, Page lu

raising loans and a relaxation for companies of a provisions covering interest are a further extension of the stock relief scheme of 1974 is almost certain, and the stock relief scheme of 1974 is almost certain. on day of mourning

BY JONATHAN CARR

final quarter of 1978, although crupted in Tehran yesterday there was little change in the during a day of mourning declared by the new Government of Dr. Shapour Bakhtiar to mark the deaths of anti-Shah

> There were fears that similar trouble would occur today because of another day of mourning. This one was called by Ayotollah Khomeini, the Paris based religious leader. The call also has the backing of the main local Moslem leaders. On Saturday Ayotollah Khomeini denounced the new government as "illegal " and as "a plot of the Shah to stay in power.

. He called for the struggle against the Shah to continue.

The new Government, which weas worn in by the Shah on Saturday, consists of 13 members besides Dr. Bakhtiar, most of them technocrats of no previous political affiliation.

Rey members are General Fereidoun Jam, a retired armed services chief as Minister of War, and Mr. Ahmed Mir-Fendereski, a respected diplomat at Foreign Minister. The other ministers, although lack-ing a political following, will have the task, vital to the success of the Government, of persuading strikers in the key

An immediate priority of the

Government is the trial of as many as 30 former ministers, including ex-premier Amir Abbas Hoveida, on corruption charges. Mr. Cyrus Amouzegar. the Minister of Information, said yesterday: "The Government's first task would be to pass a new law to deal with these offences." The early departure abroad

the Shah is considered crucial to the success of the creased new government. Parliament is despite an agreement with expected to meet on Tuesday striging oil workers. But out-when its approval of the new put is only 265,000 barrels a Cabinet will be sought. The day compared with a maximum Shah told the new ministers on attainable 6.5m barrels a day. Saturday he would be leaving Domestic requirements are Iran for a rest and that he was about 700,000 barrels a day.

SPORADIC street violence economic sectors to return to tired of bearing all the responsibilities for the country.

In keeping with the Constitu-tion, the Shah will be represented after his departure by an appointed Regency Council before during previous absences of the Shah. Economic dislocation con-

tinues. Banks and shops were shut as part of the day of mourning, and there were still long queues for petrol and fuel for heating. Oil production has inonly

London Brick to close plant

London Brick's joint produc-tion plant outside Tehran is to close temporarily because of increasing difficulties in maintaining the continuous production needed for brick making. Frequent power cuts and a lack of fuel to fire the kilns have caused the problems. The plant has not been involved in any civil dis-

plant. London Brick has a 20 per cent share and has to date invested about £500,000 in the project. Other partners are the Iranian Industrial Credit Bank (20 per cent). the Tehran Guild of Brickmakers and the Iranian public (about 30 per cent each). Effects of Iran crisis on

British companies, Page 10 The Tehran London Brick U.S. banks take cautious line, Company was formed in 1975 with £5m capital to build and Page 2

Thatcher hints at curb on unions

By Elinor Goodman, Lobby Staff

MRS MARGARET THATCHER loated the idea of abolishing the right to strike of workers in essential industries such as gas and electricity when she spoke on television of big changes in laws affecting unions. She confirmed that a Tory

Government would introduce a law to help trade unionists hold secret ballots when they wanted Conservative Leader appeared to adopt a more abrasive attitude to the unions than those in her party speci-

fically responsible for dealing with them. Interviewed on London Weekend Television's Weekend World, she linked in a new way two ideas which have been gaining popularity in the party the last few months secret ballots and withholding of social

security benefits to strikers. Mrs. Thatcher said that if a consider giving social secuirty work a Tory Government might voluntary ballot system did not and other benefits only to strikers who agreed to industrail action after a secret ballot.

Though she may have given the impresion that the Tories would throw the book at the unions, she did not say much that had not been said before the party's front-bench employment spokesman.

But her tough attitude to the unions will have comforted those on the Right who feel that the party may be getting too close to the unions.

The legal immunity enjoyed

by unions would be reviewed she said, by a Tory Government in the light of the "very different power structure which existed today. The unions had been "put

above the law" because at the time it was thought that they needed such immunity to get decent wages. Now conditions had changed totally. As a Parliamentarian she was not prepared to enable

inflict harm and damage on others and be immune from At the moment there were some sectors, such as gas, electricity and water, in which the

anyone to have a "licence to

unions had the power to hold the nation to ransom. This immunity, ironically, was given the unions as a result of the Tories' own Industrial Relations Act, but there were certain services so vital that the right to strike might have to be reviewed.

A Tory Government would try to tax short-term social security benefits received by strikers, and give workers the right to legal compensation if sacked because of a closed shop.

take capital of Cambodia

Vietnamese

BY DAVID HOUSEGO

Phnom Penh, the Cambodian capital, according to an announcement over Radio Hanoi.

It claimed that the two-week invasion of the country was carried out by insurgents and said Phnom Penh and half Cambodia had fallen into their

The pro-Vietnamese forces stormed into the city which has now witnessed its second "liberation" in three years at GMT. A few hours before that Phnom Penh Radio, the official broadcasting station of Premier Pol Pot's Government, went off the air.

There was no news of Pol Pot but it was assumed that in line with a strategy believed to have been worked out with the Chinese four months ago, he decided to abandon the capital -indefensible against superior Vietnamese ground forces—and attempt to fight a protracted guerrilla struggle with his base in the jungle south west of Phnom Penh. The city was almost deserted after the forced evacuation of its population by

the Pol Pot regime. Before the pro-Vietnamese forces took Phnom Penh, the President of the Kampuchea (Cambodia) Natinoal United ront for National Salvation (KNUFNS) — established a month ago—issued a radio call for surrender to the Pol Pot

Aggressor

In deciding on a lightning campaign to overthrow the Pol Pot regime, Vietnam has has been in Cambodia. gambled on achieving a swift The Soviet officia aggressor. Vietnam in its present economic plight cannot afford to get bogged down in another costly local war.

Before the fall of Phnom by intelligence sources to be heavily strengthening their forces along the border with Vietnam in what was evidently an attempt to deter the Vietnamese from further encroachments in Cambodia,

sought protection the Phnom Penh regime." recently

VIETNAMESE FORCES with against possible Chinese attack the help of Cambodian insurthrough a 25 year Treaty of gents yesterday made a sur-Friendship with the Soviet prise advance and captured Union. This provides for consultation in the event of either side being attacked.

Though the Chinese are deeply concerned at the extension of Vietnam's—and hence of Russia's—influence in Indochina that military success has brought, it is now thought unlikely that they will risk action that could create open conflict with Russia or her allies.

The Chinese tactic would seem to be to continue supporting guerilla resistance to the will be dependent on access through Thailand for supplies. The Front is expected to seek

apid recognition internationally as the legitimate govern-ment of Cambodia. It will almost certainly obtain this from both Vietnam and Russia. In an attempt to soothe the hostility of other South-East Asian nations, the new regime has said that it wants a policy

good neighbourliness with

Soviet view

other Asian States.

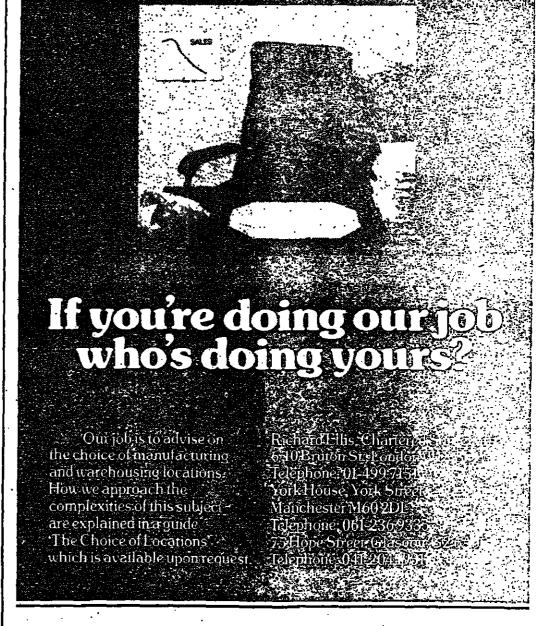
Prince Norodom Sihanouka the former Cambodian Head of State, has flown to Peking from Phonom Penh on his way to New York. He will accuse Vietnam of invasion at the Security Council.

Significantly Chinese accounts of the conflict have ceased to mention Pol Pot's name-an indication that they are possibly hoping to replace him by Sihanouk as a figure more acceptable in Vietnam and inter-

Until his arrival in Feking, Prince Sihanouk had not been seen for two years although he

The Soviet official news TASS announced risk of being branded an fall of Phnom Penh in a brief communique without comment. But recent Soviet Press comment has come out strongly against what it describes as the reactionary Pol Pot-Ieng Penh, the Chinese were reported Sary clique" and has voiced strong support for the Cambodian Salvation Front support for (KNUFNS).

The Soviet view, expressed through the media, is that the Front "enjoys broad support among the people of Cambodia Such a move had been fore- who have risen in a just seen by the Viet nese who struggle for the overthrow of





THE INDO-CHINA CONFLICT

The new rulers of Cambodia

now nominally in charge of the capital Phnom Penh can be expected to seek diplomatic recognition as the country's legitimate government as quickly as possible. Established only a month ago under the wings of Vietnam as the National Union Front for the Salvation of Kampuchea (KNUFS), relatively little is known about its organisation and leadership.

One of its major difficulties in gaining support in the country and abroad will be that will be considered by the Khmer population as a pupper government under the control of Vietnam with whom the Cambodians have a long history of hostility. It is apparently because of this that the Chinese have turned to Prince Norodom Sihanouk, the former Cam-bodian head of state, and once a popular, flamboyant figure to champion their cause in the guerrilla fighting that is now likely to ensue.

The President of KNUFS is Hang Samrin, 44, a former sup-Premier. Pol Pot, who in 1976 Premier. Pol Pot, who in 1976 The Front's programme, was made a political commissar announced on December 3, is

THE NEW Cambodian regime and deputy chief of the military an attempt to win popular announced an eight-point pronounced not capital Phonom Penh can be with Chea Sim, 46, vice-presi-regime of Pol Pot. It promises liberated areas." This called for and deputy chief of the mintary zone bordering Vietnam. Along with Chea Sim, 46, vice-presi-dent of the Front, he appears to have taken part in the abortive attempt to overthrow Pol Pot last May. But the best known member of the insurgent movement is So Phim, the former vice-president of Cambodia, who also took part in the revolt last May. He has not been named, however, as one of the 14 members of the Front's Central Committee.

In an effort to smooth relations with the ASEAN States. apprehensive of a Vietnamese take-over of Cambodia, the Front has called for a policy of good neighbourliness with other South East Asian States. It also yesterday condemned the attiempts of Premier Pol Pot tto internationalise the conflict with Vietnam through reference to the Security Council by saying that this was contrary to the principle that "the internal affairs of Kampuchea are to be settled by the Kampuchean people themselves without foreign interference" and con-

trary to the UN charter.

tion and religion, and to abolish the resettlement policy under which people were forced to leave their homes and work in

In sharp contrast to Pol Pot's unpopular policy of attempting to control the family unit and impose state control on children, the Front declared that it would abelish com-pulsory marriage and "restore the happy life of every family." It has announced that it after would establish banks, restore 1975. money as a unit of exchangeabolished under Pol Pot—and lay down an eight-hour working

On foreign policy, its views not unexpectedly come close to those of the present Vietnamese government, in supporting efforts to build "South East Asia into a region of peace, freedom, independence. neutrality, stability and pros-perity." Cambodia, it has said, would not join any military alliance or allow foreign bases on Cambodian soil.

gramme for administering " the the setting up of "people's self management committees" drawn from victims of the Sol Pot regime, revolutionaries and trusted people who would have responsibility for administering the territory.

City dwellers, it said, would be allowed back to their former residences when the overall situation in the country allowed -an implicit promise to allow people back to Phnom Penh which was heavily depopulated after Pol Pot took power in

to reintroduce the currency, but the Front said that workers would be remunerated in kind. For soldiers who surrendered or were captured, it promised only a five-day re-education period but said that those who who did not give themselves up could face unspecified periods of confinement.

The Soviet news agency Tass, gave details of the Front's programme—adding strentgh to the belief that the Soviet Union wil be one of the first countries Yesterday the rebel Front to recognise the new regime,

Washington unclear on Soviet role

BY JUREK MARTIN, U.S. EDITOR, IN WASHINGTON

ALTHOUGH THE U.S. State border with Vietnam in a clear Department warned that the Vietnamese capture of Phnom Penh could "seriously aggra-vate" the situation in China, the actual fall of the Cambodian capital came as little surprise here. There was ample evidence last week pointing to the possible collapse of the Cambodian forces and it was widely noted that the Government of China had publicly urged Pol Pot, the

however, as to what Vietnam Russian hostilities, which could will do next. China has quickly assume major interrecently significantly built up national proportions. This. how-

Hungary

raises

imported goods.

It is understood that Hungary.

along with the other Comecon

states will this year have to pay

about 20 per cent higher prices

for Soviet crude oil than last

year. But Western economists

estimate that the cost of subsidised investments by the other Comecon members in the

development of the Soviet raw

material base together with the

effects of inflation with regard

to additional Soviet oil deliveries combine to produce

an even larger increase in the

real price of Soviet crude for

about 8.5m tons of Soviet crude.

The Soviet Union accounts for

almost 100 per cent of Hungarian imports of crude and

Meanwhile the 1979 economic

plan just released by the Gov-

per cent in 1978. Mr. Ference

Havasi, the Central Committee

Secretary in charge of economic

affairs stressed in a new year

economic report in the party

daily. Nepszabadsan that the

rise in living standards must be "more closely harmonised" with

He also revealed that last

year exports to the hard cur-

rency areas rose only by 4 to 5

per cent instead of the projected 12 to 13 per cent. At the same

time the import bill in terms of

hard currencies jumped by 15

per cent as against the planned

Reuter reports from Prague: Mr. Pavel Landovsky, 42, a dissident actor and playwright will

leave Czechoslovakia for Austria

next Thursday on a long-term working visa. Mr. Landovsky was one of the original signa-

tories of the Charter 77 human

rights manifesto and was twice

arrested, spending a total four

R per cent.

once a year.

real economic possibilities.

Hungary will this year import

the East European buyers.

refined products.

warning to Hanoi to restrain itself: but U.S. officials generally believe that China does not want to invade Vietnam. At the same time, it is unclear

here if the Soviet Union is either able, or willing, to restrain its client state Vietnam. There were reports circulating here that Soviet troops had been observed moving on the Chinese border but their veracity could

Cambodian leader, to retreat into guerrilla warfare against the Vietnamese invaders.

There is uncertainty here, an outbreak of direct Sino-From the U.S. standpoint, the worst case" scenario would be

There is greater concern that Vietnam, acting on its own, or at the behest of the Soviet Union as a counter to the normalisation of Sino-American relations, would pursue militarily aggressive policies not only in Cambodia but towards Thailand and Laos.

Arguing, however, against this, is the belief of some officials here that Hanoi wants desperately to improve its own international economic conditions and could not entertain such expansionism as a result.

Direct U.S. influence over either Cambodia or Vietnam is non-existent, while official policy remains that disputes between

two Communist states are not the concern of the U.S. It is reasonably certain that arguments in favour of moderation have been pressed in both Peking and Moscow.

To a limited extent, in con-demning the Vietnamese invasion, the U.S. may appear to be more sympathetic to the plight of Cambodia (although officials here are at a loss to explain why Cambodia should have attacked Vietnam in the first place). But it is freely admitted that the Government of Pol Pot is a blot on the international scene and that any replacement, even one operating as a guerrilla force, or in exile, would

Juan Carlos calls for discipline

BY ROBERT GRAHAM IN MADRID

prices armed forces, into an un-expectedly tough lecture on the By Paul Lendvai în Vienna STEEP PRICE increases for and a wide range of con-goods come into force its sense of discipline, it ceases Gutierez Mellado, for his con-of General Ortin has so far met petrol and a wide range of cou-

4.9 per cent rise in the overall Thursday of the assassinated military governor of Madrid, General Ortin, which resulted consumer price index for 1979. According to the official communique, the price of standard in a number of officers giving and premium grade petrol will go up by 25 per cent, of tobacco the Fascist salute and shouting anti-Government slogans. This and eigarettes by 30 per cent, of kind of military indiscipline rice by 50 per cent, of building "really shameful," was materials and beer by 20 per

King said. cent. As of February 1, newspapers will cost 40 per cent As before, the latest price forces over the wave of terrorist increases are motivated by the attacks against them, the King need to adjust domestic prices to those on the world market, particularly with regard to

KING JUAN CARLOS turned a Mistakes can be corrected, but a night club near San Sebastian. weekend ceremonial meeting a soldier or an army that loses. This was the first time a person with senior member of the discipline is no longer an accompanying a member of the

need for discipline. He bluntly his way to congratulate the terrorist death toll to five. today in Hungary but it is claimed that the increases will not affect the projected 47 to order followed the funeral last order followed the funeral last and a contribute order followed the funeral last and a transfer on the public is under bitter transport in his bad a negative said, may have to refer followed the funeral last and a transfer on the public is under bitter transport in his project on the contribute of the public is under bitter transport of the public is the public of the duct at the Ministry. His liberal with no success. On the con- U.S. and Panama, Mr. Hansen and at Thursday's funeral most the police. A special search con- ; refuses to approve funding for of the slogans were directed ducted by some 4,000 policemen; the two accords, reached after against him, calling for his resulted in the arrest on Friday

resignation. of the King's speech-at a time when the monarchy is expected had come to Madrid to collect to play more of a back seat rule their car which had been with the party of the new constitution — underlines the Meanwhile at a road block on While sympathising with members of the armed forces and of the para-military security provoked by increasingly fre-failed to stop when challenged.

quent Basque terrorist attacks against them.

army, he said. security forces had been killed.

The King also went out of Their deaths brought the week's

esignation. of seven Basques who subse-The overtly political content quently proved to be a pop group and three persons who

This resulted in the death of a 15-year-old boy who was accomattacks against them, the King against them.

insisted they must not be proinsisted they must not be proinsisted. "The dangers of invoked. "The dangers of inviolence on Saturday. Basem and outing. This latter act has
discipline are greater than separatists shot dead a Guardia provoked a storm of protest in
those of making mistakes. Civil and his girl friend outside the Press here.

Unions challenge Lisbon regime

PORTUGAL'S conservative non-

party Government faces a strong challenge from the Communist-national Monetary Fund last dominated central trade union March. The 20 per cent was body CGTP over the continuation of the 20 per cent wage rise inflation rate for the year. Thus slowly south just outside limit imposed last year by the unions agreed to no improve. Portugal's 200-mile economic Dr. Mario Soares's Socialist-led coalition.
CGTP. claiming to represent

the nationity of the unionised labour force, said at the weekend that the wage restraint policy had ended on the last day of 1978 and wage claims would be in line with cost-of-living increases. Sr. Mota Pinto's Government

ernment, warned that real wages per head will increase had earlier issued an official statement reaffirming the curthis year only by 1 per cent as against an estimated 3.2 to 3.5

the time of the economic aid Andros Patria, is to be repaired deal signed with the Inter-national Monetary Fund last or moved elsewhere. meant to match the forecast Dutch tugs, is reported limping ment in living standards during zone. It is under surveillance by

clearly aimed at reminding the present Government of the conditions of the bargain and also special lightening tanker, the at warding off rank-and-file British Dragoon, have been unrest at a time when a rival sent to transfer the 200,000 Socialist-backed central trade tonnes of BP-owned Iranian union organisation is making crude which has not spilled inroads. Meanwhile a decision is

rency of the 20 per cent ceiling. expected today on whether the in its side caused by explosions. The measure was adopted at crippled Greek super tanker, off north-west Spain a week ago.

The ship, under tow by two the year, which was accepted as the Portuguese many and is a short-term sacrifice.

accompanied by the 250,000-CGTP's latest challenge is tonne BP tanker British

> from the damaged ressel, Andros Patria has a 45-foot gash

Militia 'will resist' Lebanon force

BY DAVID LENNON IN TEL AVIV

THE ISRAELI-backed Christian resist any attempt by the troi of the South it was resist any attempt by the troi of the South it was the border with Israel through the border with Israel through which the Christians currently which the Christians currently forces in southern Lebanon will at the weekend, according to Israel radio. months ago the

Christians blocked a move south by a Lebanese batallion because they said the Lebanese soldiers were hand-picked by the Syrians were sympathetic to the Christian forces

worried by reports that the Government in Beirut intends to send Lebanese forces to replace the Iranian and French troops, which are expected to be withdrawn from the UN forces in the South.

months in dentention.

The 730-day visa carried two stipulations. The first was that while outside the country he Israel radio, the war Council of the Christian Militia along the must observe the laws of Czechoslovakia, effectively barring him from making any statesend Lebanese troops was a a peace treaty with Israel and prior to another shuttle by the "dirty trick" conceived by the he was ready to sign "right U.S. Secretary of State. Mr. ments critical of the regime. "dirty trick" conceived by the he was ready to sign "right U.S. Secretary of State, Mr. UN forces and their Commander now." The Egyptian leader Cyrus Vance were "without The second was that he can return home for a holiday only General Emmanuel Erskine.

receive supplies, medical aid and market their goods.

Once the border is closed they fear that the Polestinian guerrillas will try to dominate the area as they did before the Israeli invasion last March.

In Jerusalem, the Government announced that Israel will give refuge to 100 of the Vietnamese refugee boat people now waiting on ships in the South China sea. A special plane will be sent to pick up the refugees and they will be offered Israeli citizen-ship when they arrive here. AP reports from Cairo:

In a statement quoted by President Anwar Sadat was quoted as saying at the weekend that reports from Israeli diplothat the unstable situation in mats that a meeting of low-level Israeli border, said the plans to Iran lent new urgency to signing made his remarks to a seven- basis."

The Chr.stians are afraid that member delegation of U.S. Conif the Lebanese army takes con-

Mr. Donald Mitchell, who said he took notes of the meeting, quoted Mr. Sadat as saying. "I'm ready to sign at this moment, right now. What is happening in Turkey and Iran makes it vital that we act now."

Mr. Sadat told the Congress-men during the closed-door meeting that he believed talks would be resumed soon and that it was only "a matter of time" before a peace treaty would be signed but he gave no indication of when renewed negotiations might get under way. U.S. Representative Laurence McDonald

The acting Foreign Minister, Mr. Butros Ghali, meanwhile, told a news conference in Cairo representatives would take place

appeals for detente A dramatic wall poster calling for detente with the Soviet Union and the removal of the late chairman Mao Tse-hung's body from his mausoleum drew

China wall

poster

big crowds in Peking over the weekend, but doubts were raised about its authenticity, Reuter reports from Peking. The poster, signed by an organisation calling itself the Chinese human rights league, appeared overnight on Peking's democracy wall and demanded sweeping changes in the way the country is run. It dealt with several subjects believed to be troubling many Chinese but also raised other issues regarded foreigners as unusual in the context of the political changes now taking place in China. In particular, they noted a call for peace with the Soviet Union, China's sworn enemy, praise for the Soviet people and demands for publication of such topsecret statistics as the military budget, the strength of the armed forces and details of military aid and economic aid supplied to other countries.

Refugee boat move

HONG KONG has taken strong measures to stop organised racketeers bringing refugees to the colony by ordering all ships to obtain prior permission before entering Hong Kong, AP reports from Hong Kong. A Govern-ment spokesman said that masters of all Hong Kong-bound ships must notify the bound ships must notify the Marine Department of the ships' nationality, the number of people on board, type of vessels and reason for calling at the colony before entering Hong Kong waters. He said violators liable to a fine of HK\$20,000 (US\$4,255) and to possible imprisonment of one ear. The order followed per sistent reports that organised racketeers together with the Vietnamese Government were collecting millions of dollars from nationals fleeing Vietnam.

Panama warning A LEADING U.S. Congressional opponent to the Panama Canal treaties has said he hopes Panamanians react "maturely" if Congress refuses to approve funding for the accords when they come before Congress this month, AP reports from Panama, The U.S. Congressman, Mr. George Hansen, an Idaho Repubtican, also said he still opposed tne treaties after a two-hour meeting with the Panama President Sr. Aristides Royo. The

Afghan border move Thousands of guerrillas, some

13 years of talks.

armed only with 19th century muskets, are converging on a strategic town in eastern Afghanistan for what could be a major battle in their campaign to oust the Kabul regime, according to dissidents, Reuter reports from Peshawar. The guerrillas, fighting in the name of Islam, are hitterly opposed to the pro-Communist Afghanistan Government which took nower in a coup last April. Dissident Afghans in Peshawar on the Northwest Frontier said more than 5,000 guerrillas were poised some nine miles from Chipha Serai, capital of Kunar Province.

Pakstan poli call

The Pakistan People's Party (PPP) of former Prime Minister Zulfikar Ali Bhutto has called for national elections by March 31 at the latest "in view of the prevailing internal and external situation." AP reports from Islamuhad. The demand followed a meeting by the PPP's Central Executive Committee in honour of Mr. Bhutto's 51st birthday. The deposed Prime Minister and party leader is currently in jail under a death sentence for ordering the killing of a political opponent four years

India to buy airbus India is to buy another A-300

Franco-German airbus to add to Indian Airlines' existing fleet of five airbuses, according to officials. Reuter reports from New Delhi. A Cabinet decision has been reached but the officials have made no mention of an agreement being signed yet. A spokesman of Indian Airlines said the wide-bodied airbus was expected to be delivered by October this year and would be used to ease the rush on domestic routes. He said the airline had asked Government's permission to buy another 278-seater airbus.

S. Yemen attack Marxist South Yemen has

launched an armoured attack on the neighbouring North Yemen district of Al Bayda, the Lundonbased newspaper Ash-Sharq Al Awsat reported at the weekend, according to Reuter from Jeddah. The newspaper, which is also published in Jeddah, said a South Yemeni armoured brigade, supported by fighter planes, began the attack in the morning on the border province. It quoted a North Yemeni official in the capital of Sanaa.

THE GUADELOUPE SUMMIT

Sun, SALT and Sand

BY ROBERT MAUTHNER IN GUADELOUPE

THERE ARE only two ways in daughter Amy to complete the head of state that this was not possibile because Mr. Callaghan possibility or the prevention of They were housed in separate had already donned his swimwhich you can discuss the possibility or the prevention of a holocaust provoked by the massive use of strategic nuclear weapons, one of the main subjects of the Guadeloupe fourbungalows, each equipped with ming trunks.

a living room, bedroom and ... Her Schmidt meanwhile, was power summit. You can rush around tearing your hair and collapse with a nervous breakdown at the awful prospect, or you can pretend that the U.S. Soviet nuclear arms race is just another sticky international problem which can be solved by reasonable men. President Carter, President Giscard d'Estaing, Mr. Callaghan and Her Schmidt, happily for

meeting was so casual, relaxed and idyllic that it might wellbe asked whether they did not risk losing all sense of reality. To underline their claim that they were having no more than a friendly chat in the sun while

their countries and the rest of the world plumped for the second procedure. But the atmosphere at their Caribbean

Europe was in the grip of one of the severest winters in the past two decades, they brought their wives along, a privilege granted to only a few of the richest journalists covering their meeting. President Carter even brought his irrepressible

China and the future of their less fortunate colleagues, the Shah of Iran, in a simple palm-thatched hut, topless bathing beauties were disporting themselves on an adjoining beach. Eresident Carter's Chief Eresident Carter's Chief Security Adviser, Mr. Zbigniew Brzezinski and the Secretary to the British Cabinet, Sir John Hunt, even swam around to have a look at them, while ostensibly engrossed in more

serious matters. in getting together. One American photographer, who asked President Giscard whether he could bring the Prime Minister ts covering their and Mrs. Callaghan out to pose and atrocities in Cambo lent Carter even for a group picture, received But we were told the irrepressible the acid reply from the French at least as important.

kitchenette, surrounded by a having great trouble desiing mass of brilliant tropical with coconuts. A distinguished flowers, with a balmy Caribbean reporter, who watched him like four King Canutes try at table, described fruit at table, described fruit at table, described fruit at table, described the milk, While they talked idly about the Chancellor took a long inter-continental ballistic missiles, Harrier jet contracts with China and the future of their the fruit and gave it a mighty whack on top of a wrought-iron chair. splitting the coconut in half and spllling the contents on the ground." Perhaps Herr Schmidt thought it was a German steel worker.
While their husbands were

busy in these various ways the wives went sight-seeing. Audrey Callaghan's "marvellously frumpy white dress and wide-brimmed Margaret Rutherford With all these attractions style hat" was much admired around, the "big four" some by the American Press pool times appeared to have trouble reporter present when the four families sat down to one lunch. It was all a far cry from snow drifts, lorry-drivers' and steelworkers strikes, riots in Iran and atrocities in Cambodia. But we were told that it was

THE CRISIS IN IRAN

Caution by U.S. banks

BY STEWART FLEMING IN NEW YORK SOME U.S. banks have been foreign currency reserves. Thus With the crisis imports have cautiously scaling down their it is argued, assuming these commitments in Iran in recent, estimates are accurate, Iran does clearer view of the likely impact international liquidity crisis ex-of the current crisis on the perienced in recent years by country's finances banking

sources in the U.S. say. But opinions differ about how long it will be before the country's economic and political problems seriously affect its domestic and international finan-

cial situation. Many bankers remain reluctant to take an aggressive line in trying to reduce their exposure in Iran for fear of aggravating the current situation. And they also do not want to be seen only as fair weather friends. They hope that once stable government is restored their patience now will be rewarded by new businers in the future

Major concerns are the im-pact of strikes on the foreign nayments made by and through banks some sources say payments have slowed down but not stopped-and of course the impact of the curtailing of oil exports on Iran's foreign exchange earning ability. Bankers point out that high il export levels have been

from the oil rich state.

required to meet import and debt payments. There are fears too that an exodus of technical personnel essential to the Iranian economy could undermine confidence in the future.

Perhaps the most optimistic assessment of the country's financial situation is that, according to some U.S. bank estimates, the Central Bank of

CROWN PRINCE Fand of

Saudi Arabia has come out strongly for the Shan remaining in Iran and has, more guardedly criticised the Moslem opposition to the Shah in an interview with a Saudi newspaper over the weekend, Jame Buchan writes from Jeddah. In the strongest Saudi statement yet issued in the Shah's support, the Crown Prince told the Riyadh newspaper Al-Jazirah that support the Shah's position and his continued presence in the country." In a discreet but clear reference to the Shi'ite Moslem opposition, the Crown Prince said: "The situation is not in the interest of franians themselves, Islam or the Moslems. The Shah is

the legitimate power in Iran."
The statement reflects the anxious concern in the Saudi Government and business community that the turmoli in Iran may expose social and military weak Arabia and the Gulf and could ultimately aggravate divisive elements in other part of the Middle East.

countries such as Portugal and Turkey. Even at last year's import levels these reserves are enough to cover about nine months of Iran has perhaps \$101-12bn on imports one banker suggested, changes.

fallen back sharply and while lathe long term this is not healthy months until they can get a not immediately face the sort of economically it means that the loss of the oil revenues should perienced in recent years by not immediately provoke a crisis in Iran's ability to meet foreign payments assuming con-ditions in the country are stabilised in the coming months. One source at a major U.S.

bank suggested that there is more concern about the ability: of the government to finance itself. He suggested that the Iran Government could shortly be forced to seek further loans. a move which would present international banks with a for-

midable decision. Last year Iran attempted to drive a hard bargain with international bankers seeking funds at around one half a percentage point above LIBOR, a rate which several banks were unhappy with and which, according to one source meant that loan commitments were 'not signed

before the crisis flared up. As of June of last year, according to a study prepared by the comptroller of the currency, U.S. banks had just over \$2bn of loans in Iran, but this total would include private financing some of which, for example, could be guaranteed by U.S. companies with operations in Iran, "

Of greater concern in the long term, even assuming stability is restored rapidly, is the impact of the political. crisis on certain projects being financed in Iran which may not proceed to the point of earning revenues because of policy

Oil supplies 'serious' says IEA

BY TERRY DODSWORTH IN PARIS

though not yet an emergency, has been created by the drying up of oil exports from Iran, according to the Paris-based International Energy Agency. The IEA said at the weekend,

that it would be "pretty nervous" if Iran's oil output continued at its present low level until March. But the agency believes that it should be able to avoid putting into effect its erisis oil-sharing system over the next three months. The rules of the 19-member

IEA which includes most of Western Europe, the U.S. and Japan, state that the emergency oil-sharing programme, can be put into effect once normal supplies are reduce by 7 per cent. The agency is due to take a decision of whether to enforce this plan on January 20 when it will have built up a clear idea of the long-term Western supply

A SERIOUS oil supply situation, ruptive effects of Iran's prob-though not yet an emergency, lems can be contained. First, other oil producers within the Organisation of Petroleum Exporting Countries can probfuture. Secondly, demand from importing countries will probably decline in the next hefore Christmas to beat the 14.5 per cent OPEC price rise

> Saudi Arabia, producing a maximum of 6.5m barrels a day. world's daily oil supply and a fifth of OPEC production. York: Although the Iranian

hree months because of the build-up in oil company stocks \$2.55 a barrel in some cases. before Christmas to beat the "Doves" are arguing that anounced in December.

Iran is normally the world's second largest oil exporter after

AP-DI reports from New crisis has driven prices sky high for the small amount of crude at the mercy of suppliers for the oil available on the spot market, first quarter, since the alternathere is more concern in oil tive to refusing contract supplies industry circles about prices for is to pay even more for spot Two main factors, underlie hig volume-contract deals in the market supplies if they can be the agency's hope that the dis- first quarter of the year, accord- found.

ing to Petroleum Intelligence Weekly

In its issue published today, the weekly says the size of contract price increases is under ably make up much of the hot debate within oil companies Iranian shortfall in the near with executives taking sides as with executives taking sides as "hawks or doves" on the issue. The small volumes of spot oil selling are commanding premiums ranging from \$1.75 to contract price increases far in excess of the OPEC rise will create problems in oil-consum ing nations and possibly provoke a new round of OPEC increases, "Hawks" counter that com-This is about 10 per cent of the mercial realities must dictate contract pricing and that "give-

way deals" will not stem the unward price spiral anyway. In either case, refluers concede that they are almost totally

Arrests herald Peruvian strike

BY NICHOLAS ASHESHOV IN LIMA

ARMY UNITS and riot police Peruvian Workers (CGTP), strike decisively because weakmoved into key positions in Peru's bigegst union grouping, Lima, main provincial towns which is closely associated with

The Government has declared

a state of emergency and imposed the equivalent of martia llaw. Union and political informants say that security police have rounded up 120 union leaders and left-wing politicians in Lima. At least an equal number are likely to have been detained in the minug camps and provincial towns.

Two prominent men held are Sr. Gustavo Espinoza, head of Peru's Moscow-line Communist Party and Sr. Alfonso Barrantes president of the Peruvian Democratic Union (UDF) a Marxist

the General Confederation of tough line and try to crush the centes

and large mining centres yesterday, in readiness for a Comnunist-led 72-hour general against recent price increases
strike which is due to start and the military Government's
at midnight tonight. Party. The action is in protest against recent price increases and the military Government's austerity policies, as well as in support of higher wages.

For the past three years Peru has been moving deeper and deeper into economic crists. Indicate the first in July 1977.

For the past three years Peru has been moving deeper and deeper into economic crisis. Inflation last year was 75 per cent and real wages have dropped by over 40 per cent in three years. The strike is not being sup-ported by the centrist APRA which represents about a third of the electorate and is hoping that the military will help it take over control of the labour movement from the Com-

munists. APRA leaders say that the military Government led by General Francisco Morales confederation.

The strike has been called by General : Francisco Morales

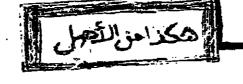
Bermudez is going to take a

ness now, would result in stronger and more frequent challenges in a few months.

over 40 people died in clashes with troops and police. In the second called for 48 hours in May last year, 20 people died Union leaders are believed to be planning to prolong the latest strike indefinitely with the aim of bringing down the military who have ruled Peru

since 1988

FINANCIAL TIMES sublished daily: accept Sundays and ablidays, It.S. subscription, real 300,00 pis security. Second class posting out, at his york, N.Y. and at additional mailing



Carter to announce draft of GATT package today

BY JUREK MARTIN U.S. EDITOR, IN WASHINGTON

THIS MORNING the Carter dufies beyond January 2, paredness to adopt the hitherto Administration will be making Request for such an extension absent "injury test "common public the draft texts of the will also be submitted to Conagreements designed to usher in gress and in the meanwhile U.S. to a domestic industry must be a new multipational trade era. customs officials are simply not proved before countervailing

nd

a new multimational trade era. customs officials are simply not this is the first idental step in collecting the duties that otherwhat is the first idental step in collecting the duties that otherwhat is the first idental step in collecting the duties that otherwhat is the first idental step in collecting the duties are levied. Similarly, on the code covering the presental for the its Special Trade Representation in the Representation in the gradient to sign the president has the control of the president has the congressional leaders are authority unilaterally to sign designed to present them in the the tariff aspects of the trade best possible light as serving the proved before countervalling duties are levied.

Similarly, on the code covering use of selective import safe guards, the Administration argues that other countries will be encouraged to adopt measures similar to those extant in this country against imports from one country or a few countries. By the same token, the government procurement code the tariff aspects of the trade best possible light as serving pacts, the non-tariff elements, American interests. Most of the plus certain enabling legislation, defails of the codes covering must go through the Congress.

formally briefing Congressional time but it is still clearly incum-leaders on the multilateral trade bent on the Administration to negotiations (MTN) agreements sell them effectively on Capitol last week in preparation for the Hill, particularly with the influx reconvening of the legislature of a greater-than-usual number on January 15. In a letter of new Congressmen and notifying Congress of his "in Senators in the upcoming tent to enter into" the many tent to enter into the pacts, Mr. Carter said they were to "ensure that the international trading system is both fair and

In fact, the agreements them the U.S. to "limit foreign selves are not yet finally in government subsidy practices selves are not yet finally in government subsidy practices." place, the delay resulting from without sacrificing the ability to the refusal of the last session of Congress to extend the President's authority to waive the dent's authority to waive the The U.S. has, nonetheless, itself suscep imposition of countervailing conceded in this code its pre- in the past.

France defers

Turkish debt

ANKARA — Turkey and France have signed an agree-

ment here deferring payment

of FFr 530m owed by Turkey

to the French Government and

Under the agreement, the Turkish debt, which is, or is coming, due, will be repaid in six to eight years with 7.8 per

cent interest rate for private

loans and 3.5 per cent for gov-

ernment loans, Finance Ministry

officials said. They added that the agreement also provides for

the release of a project credit

credit of FFr 60m to Turkey.

Turkey has signed similar

debt reschedulement agreements for a total debt load of

\$1.4m under an umbrella agree

ment with the Organisation for

Sconomic Co-operation and De-

velopment (OECD).

private concerns:

the non-tariff elements have The Administration began been public knowledge for some time but it is still clearly incum-

> Thus, in summarising the code on subsidies and countervailing duties, the Adminstrafion argues that it will permit the U.S. to "limit foreign make effective use of countervailing duty law."

Government procurement code "will increase opportunities for American and other exporters to bid for sales to foreign governments."

Left more uncertain at this stage are the parallel negotiations on agricultural trade. Mr. Carter promised Congress full consultation on "several agreements on agricultural trade that we intend to enter

It is freely conceded inside the administration that the congressional passage could be rough. As the American economy begins to slow down and as unemployment begins to rise in the months ahead, demands for protection for U.S. industries are bound to mount. Congress has frequently shown itself susceptible to such pleas

World Economic Indicators

	UNEMPLOYM	ENT		
			Oct. 78	
UK 000	Ps 1,320.7	1,338.9	1,360.0	1,428.4
	% 5.5	- 5.6	5.7	6.0
Holland 000	D's 209.1	209.2	210.2	204.7
	% 5.3	5.3	· 5.3	5.3
W. Germany 600	0's 1,006.7	927.0	901.6	1,090.7
	% 4.4	4.1	3.9	4.8
	Nov. 78	Oct. 78	Sept. 78	Nov. 77
France 00	0°s 1,330.0	1,344.1	1,284.0	1,054.9
	% 5.7	5.7	5.5	5.1
Belgium 00	0°s 297.1	279.9	268.6	296.7
AND THE SHAPE OF SHAPE				7.4
2.0	0°s 5,900.0	5,900.0	0.000,6	6,800.0
	% 5.8	5.8	6.0	6.9
		Aug. 78	July '78	Sept. '77
Japan 200	2 s 1,250.0	1,210.0	1,150.0	1,050.0
	k 22.	2.3	23	1.9
A STATE OF THE STA	Oct. 78			
	0's 1.651.0			
	% 7.5	7.5	7.2	
1,500 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m		·		

Brazilian trade gap increases

By Diana Smith in Rio de Janeiro

RAZIL was to have achieved trade surplus of about \$500m in 1978. Instead, by the end of November, the trade gap had widened to \$899m. In November, \$1.24bn worth

goods were imported and \$1.12bn exported, resulting in a monthly deficit of \$116m-somewhat larger than the "few pennies here or there," Sr. Mario Simonsen, the Treasury Minister, had predicted for the month. Moreover, imports for the 11 months totalled \$12.35bn — \$346m more than in January November, 1977, and exports totalled \$11.45bn — \$69m less

than the exports total for the comparable period in 1977. Sr. Simonsen, announcing the November figures, stated that he doubted whether the trade gap for the full year would reach \$1bn. However, monthly trade gaps since the beginning of the fourth quarter of 1978 have tended to be larger than the Treasury Minister's predic-

The solid performance of manufactured goods, particuwith foreign larly vehicles, sales in 1978 of \$1.2bn, means that for the first time in Brazil's trading history, the manu factured exports accounted for the largest percentage of exports (52 per cent) with com-modities, Brazil's traditional representing

remaining 48 per cent. However, this ratio is some what distorted because total export revenue was down by \$1.5bn. This was due to the persistently sluggish percommodity formance of exports, particularly coffee, soya and sugar, because of poor weather, lower world prices and other problems. In addition grain, vegetable and meat production for domestic consumption dropped severely. so that the authorities turned ensure supplies.

The aspiration to achieve a a services deficit, likely to be about \$5bn, swelled by interest and repayment on a foreign debt now calculated at \$41bn, payment of royalties or techclose to \$500m for the full year, charter of ships (while Brazil builds up its own merchant the year and other items that, in a country which does not attract mass tourism, cannot be balanced out by this invisible

U.S.-CHINA ACCORD

Ford reacts calmly to Taiwan 'shock'

FOREIGN INVESTORS in situation), and pulled out Taiwan are not packing their Toyota's departure meant that bags as a result of the U.S. its ex-partner, the Taiwanese decision to withdraw diplomatic Lio Ho Group, badly needed a

increase their stake in the country. An example is Ford Motor Company, which chose the aftermath of President Carter's normalisation broadcast as the moment to announce that it would implement a \$30m expansion plan at its Chung Li plant outside Taipei where Granadas, Cortinas and Escorts are assembled, and partly manufactured, for the Taiwan domestic

Ford is producing 90 cars a day at Chung Li (or would be if the recent strike at Ford UK had not obliged it to cut back temporarily on production of Escorts and Cortinas). It will be building 170 cars per day by early 1980 plus about 70,000 engines per year (double the present number) of which a sub-stantial proportion will be exported to Australia and the Philippines.

1972 after a Japanese company, with the figure likely to increase Toyota Motor, which had previously been involved in a licensing agreement with a local Taiwan company, had got cold feet (because of the political

Some are not only planning to cent stake in what became the expansion programme.

Stay but are also planning to increase their stake in what became the expansion programme.

The fact that Ford design and entire their stake in what became the expansion programme. taking over a trained and experi-

> one that spoke mainly Chinese and Japanese). The company started by building the "utility" Fiera in Taiwan, but soon found that the from that it takes little imagina
> from the imagina
> from t Taiwan, but soon found that the from that it takes in the highand is a afford to do because it is not a local market wanted something tion to see that the island is a afford to do because it is not a more stylish, if also a little more good place in which to make and diversified enterprise able to treat car exports as a "luxury" sell cars. expensive. Today Ford Lio Ho sell cars. turns out about 1,200 Cortinas per month as well as 500 Escorts and perhaps a couple of hundred

enced labour force (although

U.S.-naturalised chief executive of the company, says that each industrial city in the south). Car Escort and Cortina built at imports are starting to be per-Chung Li contains an average of mitted under the Government's sees future possibilities in Tal-\$1,200 to \$1,500 worth of British components. On a rough cal- but not on terms which given culation that would mean that Ford any cause for concern. Ford's operation in Taiwan is Philippines.

Port s operation in the British balance of payments, Opel Rekord sells in Taiwan at prise which would produce trucks. The Chrysler-Perkins with the figure likely to increase \$25,000 whereas Ford's comparticular to the prise which would produce the prise which wo sharply during the next 18

months.

Ford was able to buy a 70 per some of the key decisions on its liveries.

press on regardless can be at least for the time being, attributed, Mr. Chen says, in the because the scale on which Ford. first place to the conviction that Lio Ho operates is simply not Taiwan's political status will large enough to make this eco-remain unchanged for at least nomic. (He claims that Korean

and 25 per cent in the last few years and may grow faster now Granadas.

The engines and some of the that a new freeway has completed between Taipei (the parts are locally made but Mr. capital in the north of the capital in the north of the island) and Kaohsiung (a major An effective 125 per cent rate

harply during the next 18 able locally manufactured team, quartered in Taiper's best nonths.

Granada costs \$12,500. The hotel, appears to have been strength of Ford's market in pressing on with discussions

ituation), and pulled out. the cards when it decided to nearly one third of annual pro-Toyota's departure meant that enter the country in 1972. The duction at current rates. The probability that the Americans backing would be bigger, Mr. would leave had become a Chen says, if Ford dealers had recognition from the Taipei new source of capital and expervirtual certainty by March this not started turning away some Government and establish an tise from outside the country, year when Ford was making customers who want early de-

Mr. Chen rules out the pros-The fact that Ford decided to pect of car exports from Taiwan, Registrations in Taiwan have to be subsidised by other lines been increasing by between 20 of business.) This does not alter the fact that Taiwan's domestic market has many years of profitable growth ahead of it, or that exports of components and engines should continue to flourish.

As proof that Ford is not the only motor manufacturer which import liberalisation programme wan. Chrysler and Perkins but not on terms which give Engines (of the UK) are understood to be involved in discussions on a \$70m joint venture of import tax means that an with a sami-governmental enterpressing on with discussions aware that American "de-recognition" of Taiwan was on car order backlog, equivalent to sation.

SHIPPING REPORT

Dramatic rise in oil tanker freight rates

from Iran.

THE CLOSING MONTHS of for the first time for five years, ing ports, with most cargoes oil tanker capacity had resumed last year witnessed the greatest encouraged one major company bound for the U.S. rise in oil tanker freight rates to consider reletting its idle since rates fell after the Middle to importing these staples to East war five years ago. The rates held up well over the first week of the new year and the 1978 trade surplus was rooted market was optimistic about in the need to compensate for prospects in spite of continued uncertainty about oil cargoes

There was still a queue of over 50 large and very large crude oil tankers waiting for cargoes nology transfers estimated at at Kharg Island, Iran last week. Other oil tanker chartering scale 39 for a 153,000-dwt vessel. months' trading with vessels up markets were active. Some, in

Mediterranean. fleet) costing \$550m for the African and Caribbean sea areas, were much more so than had been expected. The prospects

markets.

dwt vessel for immediate load- rates for vessels. ing for a western destination. Rates for 130,000 dwt to

Japanese charterer paid World- Texaco negotiating for Prospects for tanker trading to 150,000 dwt.

In the rest of the months were The rising fortunes of the in the rest of the months were Galbraith Wrightson forecast

was paid for a 30,000-dwt white of capacity remained laid up. There were few requests for oil carrier for trading between charteres of very large and the Mediterranean and Scandiultar-large crude carriers from navia, as charterers responded the Middle East. Worldscale 30 to the deman dfor oil caused by was paid by Social for a 237,000- cold weather by paying high Time-charter business in most

world markets also picked up 150,000 dwt were also high. A over the past weeks, with

said at the end of last week to independent tanker owner were ing oil storage at the start of be favourable. London brokers reported by Intertanko, the this year reached a total of Association International of profitable trading, with inde- that there would be a rise in Independent Tanker Owners, in (Chartering said in a report

trading in the last half of 1978. At the smaller end of the All the tonnage had obtained tonnage off Iran on other tanker scale, Worldscale 300 profitable work, but 30m dwt

Intertanko said that between January 1, 1974, and December 1, 1978, owners scrapped 1,222 tankers carriers, a total of 45m dwt. Total demolition sales last year were expected to reach a new record of 15m dwt, with total fleet reduction of 16m dwt, after conversions and losses, compared with 10m dwt in 1977.

of 7.8m dwt. Howard Houlder pendent tanker owners covering new business from Mediter- a report at the end of last year. published on Friday. There were their operating and capital costs raneau and North African load- This reported that 20m dwt of 40 vessels involved,

Why come to Britain's largest unit trust group for pensions?

For the Self-Employed

Self-Employed Pension Scheme. This is a single premium scheme consisting of two separate plans – the Guaranteed Plan, which provides a pre-determined amount of pension in return for each contribution, and the Investment Plan which provides a pension based on the investment performance (see opposite) of either the Property or Equity Pension Fund-Contributions to both plans are eligible for tax relief.

Guarantee Plus Retirement Plan. This is a regular premium scheme that provides a guaranteed amount of pension which may be increased by bonuses, depending on investment performance. It is also suitable for employees who are not members of a company pension scheme.

For Controlling Directors

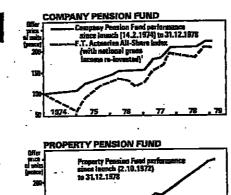
Since the 1973 Finance Act was passed, controlling directors have had far greater flexibility in making their own pension arrangements. Directors may now obtain substantial pension benefits, provide full protection for their dependants and secure significant capital transfer tax savings, all at a low section their company. Our Executive Pension net cost to their company. Our Executive Pension
Scheme, described below, is a particularly effective
way of providing all these benefits. The Scheme can
be linked to any of the tax-exempt pension funds

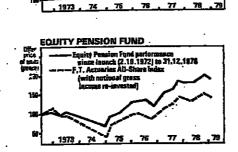
For Key Executives

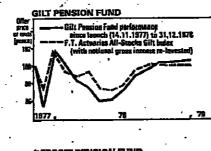
The Executive Pension Scheme is also suitable for companies which have contracted into the state Pension Scheme but wish to provide additional 'topping-up' benefits for key executives or particular groups of employees. The Scheme, which can be linked to any of the funds opposite, takes full advantage of tax relief on company and individual contributions. An important feature is that the Scheme involves the company in the

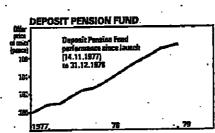
For Pension Fund Trustees

Managed Pension Fund Contract. This is designed as a service for trustees of smaller-sized pension funds whose size does not permit them to obtain sufficient investment spread or who find the cost of direct investment management prohibitively high. Through the range of funds opposite, trustees can achieve a degree of spread which is only possible









When providing for your own pension or advising others on pension matters, it will certainly pay you to consider the pension schemes Save & Prosper offer, both for individuals and groups.

Wide investment experience. At Save & Prosper we have acquired considerable investment experience over the past 44 years, becoming Britain's largest unit trust group. From this base we have developed new ways for investing in other types of funds as well as in unit trusts so that investors can achieve more objectives in simple and tax-efficient ways. As a result we are now also a major force in pensions, life assurance and annuities.

At 1st January 1979 Save & Prosper Group managed £923 million for some 700,000 investors.

Carefully designed pension schemes. The range of Save & Prosper pension contracts is a good example of our technical expertise in developing plans to meet investors' needs. We have been able to select the best features of existing contracts on offer, refine them and often incorporate our own innovations. The contracts are structured so that companies and members are both involved in the minimum of administration. In this way we believe we have pension schemes which are tailored to meet market needs with a high degree of precision and which offer good value for money.

Maximum tax relief. All our contracts are designed to take maximum advantage of all available tax relief.

Further information. For further details please consult your professional adviser or one of our branch offices throughout the country, or telephone our Customer Services Department on 01-554 8899. We have branches in Birmingham, Brentford, Bristol, Croydon, Edinburgh, Glasgow, Ilford, Leeds,

Manchester, Newcastle-upon-Tyne, Nottingham, Plymouth and Southampton.



SAVE & PROSPER GROUP

BY JAMES McDONALD

HIGHER INTERIM cement Portland Cement, which has a prices of 7.4 per cent by the 56 per cent share of the UK application by Rugby Portland Cement to the Price Commission for an overall weighted average price rise of 10.9 per

The Price Commission is to investigate the Rugby Portland proposal on Wednesday.

Under the Price Commission rulings, Rugby Portland Cement is expected to ask for a 7.4 prices. If all the regulations, under which the Commission operates, are carried out a 7.4 per cent interim increase will be introduced next Monday.

will apply also to Associated gation by April 10.

prices of 7.4 per cent by the 56 per cent share of the UK British industry may be cement market, with Rugby approved next Monday after an Portland holding 16 per cent.

The Price Commission wants a fundamental change in the cement industry's pricing structure and in June it said prices, in the long run, should be geared to reflect more accurately the different manufacturing and distribution costs.

In January last year, the cement makers - who are allowed to operate a pricing agreement — asked for a 10 per cent rise in prices and an interim increase of 7.09 per cent was allowed by the Price Commission.

The Price Commission says on this recent claim for a 10.9 The industry has a uniform per cent, price increase that it pricing system and the increase expects to complete its investi-

Lord Garmoyle joins Warburg

LORD GARMOYLE, a key figure U.S. sale of British Petroleum involved in the Government's shares in June, 1977. About sale of part of its British 13.4m were sold in the U.S. sale of part of its British Petroleum stake to U.S. citizens, is to join merchant bankers S. G. Warburg next month as an

Warburg was the leading UK ment with 51 per cent of the BP merchant bank involved in the shares.

representing a 3.4 per cent stake in the group. At the same time a 14.5 per cent stake was sold in the UK, leaving the Govern-

CONTRACTS AND TENDERS

Tender Announcement for Nominated Sub-Contracts

The Government of the State of Qatar will shortly invite bids for the Nominated Sub-Contracts for the University of Qatar which is situated approximately 6 km north of Daha. The University comprises approximately 73.000 square metres of low rise academic buildings of high quality located on a 14 nectare site.

- The Sub-Contracts will comprise:
- 1. Engineering Systems A. Mechanical.
- 2. Architectural Finishes
- A. Joinery and Associated Works.

 B. Applied Finishes, Suspended Callings and Decorations. 3. Equipment
- A. Movable (furniture)
- 4. Landscaping
- Applications to participate should be sent as soon as possible, but not later than 24th January, 1979, to: The Technical Adviser to His Highness the Amil
 - The Amir's Office, P O. Box 923.
- Doha, Qatar

Copy to Ove Arup and Partners, 13, Fitzroy Street, London, VVIP 68Q. The application must be accompanied by:

- List of major projects recently completed, quoting value and date of completion.
- List of current projects quoting value and percentage completions with contract completion date.
- 3. Complete financial statement (audited) for the past five

Interested firms should have the turnover shown in the table below for each trade and documents will be available at the Amir's Office for prequalified bidders at the prices fisted. Tumavar OP

Su	b-Contract	Turnover QK	Price QR
1.	Engineering Systems A Machanical B Electrical	160,000,000 . 000,000,00	10,000 5,500
2.	Architectural Finishes A. Joinery and Associated Works	90,000,000	5,500
	B. Applied Finishes Suspended Ceilings and Decorations	45,000,000	3,000
3,	Equipment		
	A. Movable (furniture) B Fred (littings)	75,000,000 95,000,000	4,500 6,000
4.	Landscaping		
		45,000,000	3.000

Firms must state in their replies the Sub-Contract in which they are interested. Full details of incorporation of company, clarification of relationship of any proposed joint venture and name of local agent must be supplied. Firms not supplying any of this information may be excluded from participating. The Main Contract period will be approximately 40 months. with an assumed commencement date of March 1979. It is the intention to invite bids from a select list of pre-qualified bidders at dates which are appropriate for letting sub-contracts for each of the construction elements listed above. Tenders will be valid for 90 days after submission. Tender and performance bonds will be required. All sub-contracts will be let on a fixed-price basis.

THE HASHEMITE KINGDOM OF JORDAN
JORDAN ELECTRICITY AUTHORITY
SOUTH JORDAN TRANSMISSION DEVELOPMENT, STAGE 1

the new substations and extensions at two existing substations including all necessary substation civil works. The main plant requirements are briefly as follows.

27 bays of outdoor 132kV switchgear

30 namels of incoor 33kV switchgear

20 namels of incoor 33kV switchgear

20 namels of incoor 33kV switchgear

27 SMVar cubacitor banks with switchgear

77.5MVar cubacitor banks with switchgear

The new substations will be located in Southern Jordan at Qatrana. Karak err Station, El Hasa. Ghor Sah and Rashadvia. The existing substations at Amman South and Bayader. Tenders will only be considered for the notes the substation of the control of the substation of the control of the plant with civil works. The cost of one set three tender documents will be 80 Jordan binars or \$135 sterling. Tender No. 28178 (2041022) for transformers and associated equipment for one new substations. The main plant requirements are briefly as follows:

or \$100 storting.

Tenger No. 27 78 (4041/3) for 1326V double throut overhead transmission lines equipped with 400mm nominal aluminium area conductor. Lines will be between the following places:

8-yader-Amman South—11 kms
Amman South—02t-ama—72 kms
Qatrana-Karak-Obor Sab—34 kms
Qatrana-Karak-Obor Sab—34 kms
Qatrana-Karak-Obor Sab—34 kms is ains -75 kms -2et of three tender documents will be 30 Jordan Dinars

of one set of three tender documents will be 80 Jordan Dinars sterling, will be required to project evidence of substantial experience of substantial experience to sterling the project and where appropriate payments for goods and Services blect to the terms of any Loan Agreement, if description of the extent of the work and general conditions the Director General, Jordan Electricity Authority, P.O. Box 2310.

The Hashemite Kingdom of Jordan. Preece, Carden & Rider,

Applications should quote relevant tender numbers.

Tender documents will be available from the Jordan Electricity Authority.

Redec. Cardew & Rider at the above addresses from 24th January, 1979.

Tenders are to be retrined to the Jordan Electricity Authority Office tenders he Monday, 30th April, 1979.

The Jordan Electricity Authority does not bind viself to accept the The Jordan Electricity Authority does not bind stack to accept the lawest or any tender, nor will it be responsible for any costs incurred by tenderers in preparing their tender.

Ireland urges new initiative on Ulster

IRELAND'S Foreign Minister has urged Britain to launch a new political initiative almed at breaking the stalemate in Northern Ireland. The call from Mr. Michael O'Kennedy is regarded as a new step in Irish Government

policy. Mr. O'Kennedy said: " Peace and justice can only be given full and lasting expression when there is a political pro-cess through which it can be implemented. For that reason we cannot afford to allow another year to go by without filling the political vacuum

BY ELINOR GOODMAN, LOBBY STAFF

likely to give the Tories a boost manifesto.

this week in its campaign to

brand Labour as a party domin-

ated by extremists and divided

in its own ranks. New proposals

for dealing with two of the issues on which Labour is pro-

bably most vulnerable to Con-servative attacks-defence and

immigration-are to be discussed by different committees

charged with helping to draw up the party's next election

has produced new plans for

cutting defence expenditure by

proposals also include a ban on

all new British investment in

The international department

25 per cent over a period of Commonwealth years and so bringing it in line would be given

basis for the international com- right of entry.

that has existed in relation to Northern Ireland,

He recalled the New Year message from Mr. James Callaghan, the British Prime Minister, that his government would give active support to the efforts of all peace-loving people in Northern Ireland and would continue to

bring violence to an end. Mr. O'Kennedy's speech is the first important pronounce-ment on Northern Ireland by a member of the Dublin Government for almost a year. Last February Mr. Jack Lynch, the Prime Minister.

Labour Party proposals likely

They will be discussed by the

approved, would then have to

be adopted by a full meeting of the National Executive Com-

Meanwhile, the Home Policy

Committee, under the chairman-ship of Mr. Anthony Wedgwood Benn which shares the job of

drawing up policy for the NEC.

is to be presented today with plans for a total overhaul of the

Under these proposals all commonwealth immigrants

The idea is that Australians

should be made dependent on a Pakistan. Anybody who could and the way it is dominated by restoration of human rights, satisfy new citizenship provident extremists who put national

However suggestions that a

link with the Japanese might

bring benefits for BL have in

the past been given a poor reception by Mr. Michael

Edwardes, the BL chairman.

units a year can be viable.

survive in both management

would be given equal treatment

immigration laws.

where they came from.

Bow Group calls for venture

between BL and Japanese

to boost Tory popularity

THE LABOUR PARTY looks mittee's contribution to the next

with that of its allies. The regardless of their colour or

South Africa and a suggestion and Canadians wanting to come

that any further loans to Latin to Britain would be equal with

American countries like Chile those coming from India or

They have been drawn up as a sions would have an automatic

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

A JOINT venture between BL to the paper by Mr. K. Moritomo.

(formerly British Leyland) and commercial minister at the

one of the Japanese car manu- Japanese Embassy in London.

facturers should be encouraged. stated that the proposal for a

according to a paper published careful study.

called on Britain to give some indication of a definite date for British withdrawal.

Mr. Lynch has made only one important speech on Northern Ireland since then, which concentrated on condemning the violent tactics of the IRA.

Observers point out that Mr. Kennedy had studiously avoided the question of British troop withdrawal and concentrated instead on the development of talks between Roman Catholics and Protes-tants and some kind of North-South dialogue.

siderably from Mrs. Thatcher's

agreed jointly between the Cabinet and the NEC and the chances of the latest proposals

being included in the final

they will portray as the divi-

sions within the Labour Party

defence low on their list of

ducing a situation where

Mr. Cameron suggested that

the encouragement of large-

imports to the UK. "The suc-

rationalisation is a

probably inevitable.

policies.

manifesto has to be

Only Britain, which runs Northern Ireland by direct rule, could initiate this, he

"Despite the continuing suffering and violence the climate for reconciliation has never been more favourable.

The historic election of David Cooke of the Alliance Party as Lord Mayor of Belfast and the equally historic election of Thomas Craig of the Unionist Party as Mayor of Derry, supported by the SDLP, testify to the capacity of political represen-

tatives to show generosity and tolerance in the interests of the community they serve."
The Irish Government wanted to develop structures and policies which best served the interests of all Irish

"We would wish to avail ourselves of every opportunity for consultation with a wide range of political opinion in the North as well as in the South. We have also established special priorities for cross-border economic projects government

Economy 'should just scrape by this year'

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

Research by Transport House last year showed in some areas the Tories had benefited coning in economic expansion, modest current-account surplus. call for tougher immigration controls and Ministers may be and a small fall in the exchange rate, say the stockbrokers Phillips and Drew. alarmed at the issue being raised again in an election year.

In their monthly economic analysis published today the brokers take the same broadly neutral view of the prospects as taken in most recent City

document in anything like their There is general agreement existing form are slim. Neveron likely development of the theless, the Prime Minister cannot afford to ignore them totally although they run counter to present Government economy, with a slowing of the growth rate but no significant More importantly, they may be exploited by the Conserva-tives as further evidence of what

Phillips and Drew says that these forecasts depend on moderation on the pay front, and in this area the portents are admittedly disturbing, with much resting on public-sector hargaining attitudes in the next

In the present pay round sion slowing and about £12bn average earnings might rise by more from North Sca oil, the between 10 and 12 per cent and, current account should improve, as a result, retail price inflation with an estimated surplus of return to a double-figure rate in between £500m and £1bn. This

THE ECONOMY should manage in the retail price index is proto scrape by in the next 12 jected at 11 per cent in the year months with a slight accelerate to the fourth quarter of this tion of inflation, moderate slow-year, against 8 per cent at jected at 11 per cent in the year to the fourth quarter of this present. On this basis, and given the

likelihood of no net fiscal stimulus in the spring Budget, real disposable incomes were likely to rise by only up to ; per cent to the end of this year, after a 7 per cent rise last year.
This slowing in growth of real incomes would be reflected in parallel slackening in expansion rate of real consumer spending

and of total output. The growth rate of consumers' expenditure is projected to decline from 6.4 per cent in deterioration in either rate of the year to the fourth quarter price inflation or in the trade of last year to 1.4 per cent in the same period of this year.

On a calendar-year comparison

growth is projected to drop from 5.8 to 3.0 per cent.

The rate of expansion of real gross domestic product is forecast to decline from 3.2 per cent in 1978 to 2.5 per cent this year.

With pace of economic expanthe second half of this year, compares with an estimated zero.

The 12-month rate of increase halance for last year as a whole.

Retail inflation rate likely to hold steady BY DAVID FREUD

Adverse public opinion comprice inflation is likely to have published today and giving probined with the hiving-off of the volume car divisions, under the 1978 reorganisation, is propolitical

The retail price index for the of BL in its present from is month to mid-December will be boosted by higher petrol prices. the recent rise in mortgage rates, an increase in the tele-He has said that BL has no scale inward investment from vision licence fees and in the

price of bread and eggs. However, none of this should result in any significant change in the 12-month rate, which was 8.1 per cent in November and has been about 8 per cent for eight months running.

Other indicators to be released Dritum's relicite industry—is this week cover wholesale trade is published to-morrow, prices, retail sales, bank lend. The provisional figure showed "The company is surviving Japanese investment the Key ing and the gross domestic subsidies, to surviva!" Bow Publications, product.

THE ANNUAL RATE of retail The wholesale price indices remained within the recent visional figures for December, range of about 8 per cent dast are likely to show that month, which should be indicated by new official figures to be published later this week.

The retail price index for the retail

charged by industry at the !actory gate will show whether companies have continued to absorb wage costs, as suggested by last month's figures.

Wednesday's gross domestic product figures cover the third quarter and should confirm that living standards, which reached an all-time peak in the second

The provisional figure showed tical with the September and

Access offers cards to stores

BY MICHAEL LAFFERTY

THE ACCESS credit card operation is to offer credit cards for individual businesses. Barclaycard decided last year to operate pilot schemes for com-

Both concerns predict that this year will see a boom in new card schemes

Company credit eards are issued in the name of the store group but managed and generally financed by the credit card concern. They would probably bear interest at the same rate as general credit cards

issued by Barclaycard or Access.

The management fee for the service is related to the amount business generated. Albert Armstrong, finance directors of Dunns, the men's wear store chain, which is using a Barclaycard pilot scheme, says that the charge to his group has been very attractive.

The announcement of the Barclaycard move has led to a flood of inquiries to both credit-card companies. Top of the listcome all the large retail store groups, but interest is also being expressed by companies such as motor manufacturers.

Although Access has decided in principle to issue company credit cards, its first scheme is unlikely to be announced for a

few months, possibly not until April. Barclaycard says that it has been pleased with the response to its three pilot schemes: for Dunns; Michael Barrie, another men's wear chain; and Snob, a fashion business.

Stockbroker's writ against S. M. Chan

By Andrew Taylor: W. I. CARR, a London stock-

broker, has issued a £200,000 writ against S. M. Chan (1973). the Hong Kong brokerage that colapsed at the end of last year. Several other London brokers ore also thought to be considering writs for smaller sums against Chan,

Mr. Roderick MacLeod, leading senior partner at Carr. said yesterday that the broking firm had made full provision for losses against its arbitrage business with Chan

The collapse of that business had resulted in a revision of Carr's rules for arbitrage dear-The index for output prices ings. Mr. MacLeod said that the group would not again become so exposed to business generated by a single broker. The Chan situation highlighted the difficulties of dealing between London and the volatile Hong Kong market.

Delivery of shares bought in London for Hong Kong customers can sometimes take quarter, continued to rise.

The final index of the Hong Kong trading rules.

November volume of retail delivery should take place with in a few days.

Thus when heavy selling the index at 1091, almost iden emerged as the Hong Kong market deteriorated at the end of October figures and down from last year, Chan found himself the high levels of the late seriously uncovered and critical losses resulted:

Gearing up for the micro-chip

intention of being taken over Japan would provide one way

and that a well-run car com- of casing the tensions caused

pany making around 800,000 by the success of Japanese car

The Bow Group paper cessful implementation of such

suggested that constant re- a strategy in the UK might also

organisation at BL appeared to bring about the regeneration of

have destroyed the will to Britain's motor industry."

THE IMPACT of new tech nology on Britain will be felt equally in the Civil Service as in the private sector. This was recognised by Lord Peart, the Lord Privy Seal, in a speech Society last week. Lord Peart said that before

by the Bow Group today,

The author Mr. Donald Cameron, assistant political officer of the Bow Group, the

independent Conservative study

group, said this would "capital-

ise on the specialist car

strengths of BL and the volume

car strengths of the Japanese."

venture would be "component

orders for British companies,

cash flow for BL and balance

would be a radical departure

payment advantages for

Although such a strategy and labour.

for both countries, a forward with taxpayers'

He considered that such a

office workers will use computer terminals or self-contained microcomputers much as such a complicated social they now use calculators. processing systems followed by systems capable of replacing paper handling and filing will have a tremendous

long increasing numbers of

impact on the services administrative work. Rapid access to computerheld data will become commonplace for many Government services. There is already a pilot project in operation in North London to match un-

employed people to job vacancles and word processing equip-ment is on trial at the Education Department office in Darlington. The Civil Service is already gearing up to deal with the micro-chip revolution. Eighteen months ago, the Central Computer Agency, the division of the Civil Service responsible for promopting computing in the Service, set up a micro-com-puter workshop to study and evaluate possible uses for microin government

departments. Change is being forced by the necessity to perform complex statistical and analytical functions quickly and cheaply. Computer technology has already had a major impact not only on the organisation of government but also on the legislative pro-

Dependent

doubtful whether Value Added Tax could have been introduced or whether Britain could run ment departments has grown part of a local system will

NEWS ANALYSIS

made to the British Computer TECHNOLOGY IN THE CIVIL SERVICE

BY PAUL TAYLOR

security benefits system. At the core of most of the Government's major administra-tive operations there is now a computer. From the Transport Department's Swansea vehicle Service has not been without its and driver record computer up problems - perhaps best identithe Home Office's police national the Home Office's police national fied in a report published by computer the provision of statistic the Civil Service Department in tics is now largely dependent on April.

the UK. Behind the rapid expansion

of computer use in the Civil and organisation. Service the agency and in Mr. Mr. Gerald Water Charles Morris, Civil Service Minister, it has a strong Mr. Morris said recently that

the use of computers provides more efficient administration and enables departments to give hetter service to the public. He said: "Many of the Government's tasks could not be undertaken at all without computers. Others could only be done more slowly, less accur-ately and with far larger The review numbers of staff. The introduct

He believes there will be a continuing need to expand the use of computers and in parti- changes together with further cular to exploit new develop- increases in the power of pro-

from about £30m in 1972-73 to nearly £70m in 1978-79, in addition to the £70m-£80m spent on staff and running costs. However, the rapid expansion

of computing in the Civil Service has not been without its The report, called A Longer

number of large Term Review of Administrative administrative computer instal- Computing in Central Governlations in Government has ment, looked at the role of doubled since 1970 with about administrative computing, and 200 in use today. It is now the put forward a series of proposals largest single computer user in to deal with identified problems such as the staffing of departmental installations, financing

Mr. Gerald Watson was closely involved with the review and has recently been appointed as the agency's director. He believes that the introduc-

tion of micro-electronics will have a big effect on the Civil Service but that the pace of change may be somewhat slower than is often supposed. It may be five or ten years before the full impact of micro-electronies seen within Government The review clearly identified

the introduction of powerful mini and micro-computers as one of the most dramatic

In the next decade, the UK's computing, which will put reductions in their size and computing which will put reductions in their size and cheap and sophisticated computers to be fully computerised while without computers it is Expenditure on new or visual display units and "intelligible to be fully computers it is the expenditure on new or visual display units and "intelligible to be fully computers it is the expenditure on new or visual display units and "intelligible to be fully computers it is the expenditure on new or visual display units and "intelligible to be fully computers it is the expenditure on new or visual display units and "intelligible to be fully computers it is the expenditure of the expen

multiply in headquarters and local offices. However, despite the expected increase in the use of freestanding microcomputers. large complex systems will continue to have a role to play. The agency buys most of its hardware from ICL under the Government's procurement policy and plans to replace existing equipment with the new ICL 2900 series in the 1980s. Many of the problems identified by the report are now being tackled by Government depart-

Funding

There is a move away from funding new computer installations by the agency on behalf of departments towards direct departmental funding and a greater emphasis is being placed on educating senior department managers on the need for and

ments and the computer agency.

uses of computing. However, the main problem identified by the report-that of pay and staffing—remains rela-tively intractable unless the Government is willing to devote substantial additional funds to ensure that the agency and departments can retain compuler staffs against the pressure

sector The report said "we will be wasting our time if we cannot offer our computer staff career opportunities and rates of pay comensurate with those of other employees.
Mr. Watson accepts the prob-

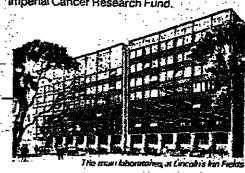
other departments have lost experienced computer staff to private industry and is at present short of them largely because of the better salaries and fringe benefits in the private

The report talks of the urgent need for the Government to deal with this problem. "Clearly, therefore, particular interest is replacement administrative comgent "terminals, whether linked being paid to the present pay
puter installations for Governto a large remote computer or review and the level of settlement in April.

FIGHT BACK **AGAINST CANCER**

It is good to remember that most people live their lives untouched by any form of cancer.

But as all too many are aware, cancer is something that casts its shadow far beyond those it directly affects. That is why so many people think it right to help the urgent work of the Imperial Cancer Research Fund.



IMPERIAL CANCER RESEARCH FUND

One of the ways you can help us NOW

au serding the sum of the as a donation to the scientific rork of the Imperial Cancer Research Fund I du/dond require a recept (please delete appropriately). *As you are sure to know a donation made by means of a Covenant allows us to reclaim tax paid, thus increasing our rusources at no additional cost to the donor We have up tocotails of how to make a Covenant arrangement - if you would like them sent, please put a tick in this box.

The Appeals	Secret	y, Ro	i in	177	1
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impenar Cancer Research Fund, PO. Sox 123, Lincoln s Intr Fields, London, WC2A 3PX,

members,

24-hour strike from midnight a period of prosperity but he tomorrow in support of the warned that any "rush" up the

NS 3 for creating 1 bus despends (de-f later)

Druker; against

 $_{i,s} N \mathbb{D}^{W}$

nnuenced by the Un when it it fitted in with an interwas an occupying power national climate in favour of the immediately after the War. Italy citizen's concern to win back enjoyed a successful form of more control over his destiny regional government which had and readjust the balance acted as a stabilising factor in between bureaucracy and relation to the problems affect- democracy.

Benn committee reviews future of Welsh mines

Wales coal industry, which lost 130m last rear and is expected to lose at least as much this year, is to be debated tomorrow by a sub-committee of the Coal Industry. Tri-partitle group chaired by M. Anthony Wedgwood Benn, Energy Secretary, in Cardiff.

At a preliminary meeting of

the sub-committee last month, a National Coal Board paper, supported by the National Union of Mineworkers, argued strongly for increased Government investment over the next five years to put the area on a firm financial base.

It is understood that the Treasury, formally represented on the sub-committee by Mr. Joel Barnett, Chief Secretary, was at least initially reluctant to approve a £17m grant to the Board last October to help it to subsidise the price of coal sold to power stations.

Unavailable : the Central Policy Review Staff (the "Think Tank") is also a breaches between its national member, thus ensuring that the and regional levels. It has not cabinet Office keeps in touch taken up the invitation.

with developments. In its paper, the board relied heavily on arguments that coals from the Welsh field were often virtually, unavailable élsewhere in the UK, and that they were crucial to the domestic and

smokeless fuel markets.

The paper said that the cost of importing the coals required Project if the coalfield were run down would be much higher than the not been neglected in the past present subsidies needed to keep year, he said. "Just last month."

would cost £40m a year. creased investment, the two announced in 1977. rramme of closure that Mr. Castlehill Colliery, which is Phillip Weekes, the South part of the Longamet complex, Wales area director, believes and a new mine to join the essential if the field is to be complex is to be driven from made profitable by the early Kinnell Colliery at Boness. 1980s, which remains his aim.

Ownon Valley. The board says is aimed at extracting a peserve

onne of coal produced.

The Welsh National Union of teeing a long life for the coal Miners has refused to agree to industry in Britain. Scotland Deep Duffryn's closure and is will get its fair share of that appealing to the full board development."

BY ROY-HODSON

Private steel sector

may switch sources

FAR-REACHING changes in the The British Steel Corporation private sector of British steel is now completing two direct aking, involving the mini-reduction ore plants at Hunter

mills switching to new raw ston on the Clyde with 800,000 materials sources, are forecast tonnes annual capacity. Plans in the latest issue of the to keep them in mothballs joudnal Metallurgist.

to be looking beyond the screp. If the plants are put into pro-steel market for future feed-duction later this year, or early stock for their electric furnaces. next year, some of their pro-Suggested alternatives include duction might be made available granulated blast furnace iron to the private sector steel com-and pre-reduced iron. panies. In any event the A private sector steel industry, appearance of large tonnages of

scheme to build a plant on the an alternative to scrap steel Tyne, for the direct reduction upon the British market would of imported iron ere, was help hold down scrap steel

Private minemile in strain. The 550 member companies including the new 800,000 tonnes of the British Scrap Federation 2 year capacity Alpha works in which have more than £150m South Wales, are contributing invested in scrap processing about 5 per cent of Britain's facilities, have told the Governiquid steel output. They could ment that the price of scrap easily double their output if steel is likely to continue to

Arguments

The 580 member companies of the British Scrap Federation

ing iron ore or obtain feedstock by some other process.

Mini-mill operators are said reappraised.

scrapped two years ago because prices of the cutback in world steel

emand. Private mini mills in Britain.

a tonne—and put the minimills

THE FUTURE of the South against the area board's Wales coal industry, which lost decision. The appeal will be

Arbifrator

The union does not believe that the board will reverse its area's decision, particularly as Mr. Weekes is a part-time mem-ber of the full board, and is preparing to take its case to the

Energy Secretary.
Mr. Emlyn Williams, president of the Welsh miners, said at the weekend: "It's rubbish to say that there's no more coal left there. The valley's full of coal. If you chose that pit, the valley will die."

Mr. Benn does not enjoy

being placed in the position of arbitrator over pit closures, a constant source, of friction between the hoard and the

Last year he proposed scheme whereby the union and board would decide jointly on pits to be closed. However, the union believed that to take the Sir Kenneth Berrill, head of responsibility of deciding on pit he Central Policy Review Staff closures would create possible

The Government is commit-ted to maintaining and expand-ing the coal industry in Scotland, Mr. Alex Eadie, Energy Minister with special responsibility for coal mining, and a former miner, said yester-

The industry in Scotland had it going. For coking coal alone, the Government approved £1.5m the paper claimed, substitutes to maintain the level of coal burned at the Kincardine power Although the union supports station—and this was in addithe Coal Board's call for in- tion to the £35m over five years

disagree sharply over a pro- "A new shaft is to be sunk at

"These operations are to cost These operations are to cost The first pit selected by the £33m, while another £37m is South Wales Coal Board for planned for the Monktonhall-closure is Deep Duffryn, in the Musselburgh Bay project, which that it is approaching of 100m tonnes of coal from claustion and loses £7.50 a under the Forth, to the coal produced. "The Government is guaran-

Trailer men top profit league

YORK TRAILERS, which makes truck trailers, tops what is claimed to be the first "profit-ability league" for the for engineering industry.

The magazine Engineering Today, which compiled the list, chose to measure performance by net return on paid-up capital. Only public companies are included because of difficulties in obtaining details of private concerns' finances.

York makes a 55 per cent return, "a staggering performance in a market which is chornically oversupplied," according to the compilers.

The group has averaged a compound growth in net earnings of over 20 per cent in the past five years. The electronics group Racal is reckoned to have the best all-

round record with angual earnings growth of nearly 60 per cent in the five years, and 40 per cent return on capital. Companies need not be in

obvious growth industries to perform well. Midland Indus-tries, for example, had annual earnings growth of 69.1 per cent and return on capital of 25 per cent in "the unglamorous business of drop-forging, tool engineering."

No more than 5% without

BY NICK GARNETT, LABOUR STAFF

RAIL UNIONS were given a have submitted claims for sub- culties from the separate pro- Union of Railwaymen has clear indication at the week-end stantial rises, not to agree deals ductivity claim by ASLEF, the warned that if there is any extra by Sir Peter Parker, chairman below the general level of train-drivers union. The union's across-the-board payments for of British Rail, that there would settlements in private industry. executive meets today to discuss train drivers, it too would be be no more than 5 per cent on At the same time, it has the possibility of sanctioning seeking further payments for its be no more than 5 per cent on offer for the next pay round taken almost a year of negounless it was attached to higher productivity.

At the same time, it has taken almost a year of negounless it was attached to higher to agree a 12-month productivity

productivity. to agree a 12-month productivity
Any flexibility round the 5 deal, backdated to last April. per cent must be achieved by a That deal has still to be productivity deal acceptable to approved by the Department of the Government But Sir Peter Employment. stressed that money was available to do this, providing performance, it will provide co-operation with the unions extra payments of about £2 a

was agreed.

The possibility of severe difficulties for British Rail pay negotiations next year has been increases on the railways keep increases on the railways keep with the account records. emphasised by the determina- up with the private sector. Claim. A further worry for tion of the rail unions, which British Rail still faces diffi-

Shell Brent platforms hit by dispute A DISPUTE has brokne out offshore construction and hookbetween 300 offshore constructors up agreement, arose on the tion workers and contractors Brent C, and men employed on employing the men on three Shell Brenf platforms.

Brown and Root joint venture.

Men aboard the Brent C and were flown to Sumburgh on

Brent B platforms have already Saturday. been flown ashore and those Then men employed by working on the Brent A were P and W Offshore Services on expected to follow last night. the Brent B. carrying out although that programme will The dispute, thought to con- post installation modifications, now be affected if the dispute expected to follow last night. cern the renewal of the current stopped work in sympathy and becomes lengthy.

hook-up work by the Wimpey,

output deal, railmen told

Offshore Services' workers on

industrial action if its claim is

The British Rail union work-

ing party looking at the claim,

which is for separate cash pay-

ments related to what the

drivers say is higher productivity since 1974, meets

the Brent A. The Brent C installed on the oilfield in June is the fourth platform to be placed on the Shell-Esso complex and was expected to be in production by the third quarter of this year.

that the dispute should not affect production on the Brent A and B because the men involved were construction workers adding additional facilities and were not involved in

production

budgeted for pay rises of 5 per

cent and indicated that anything

above this, unrelated to higher productivity, would lead to fare

increases. Rail fares were raised

No comment was available yesterday from any of the con-

Government staff pay warning

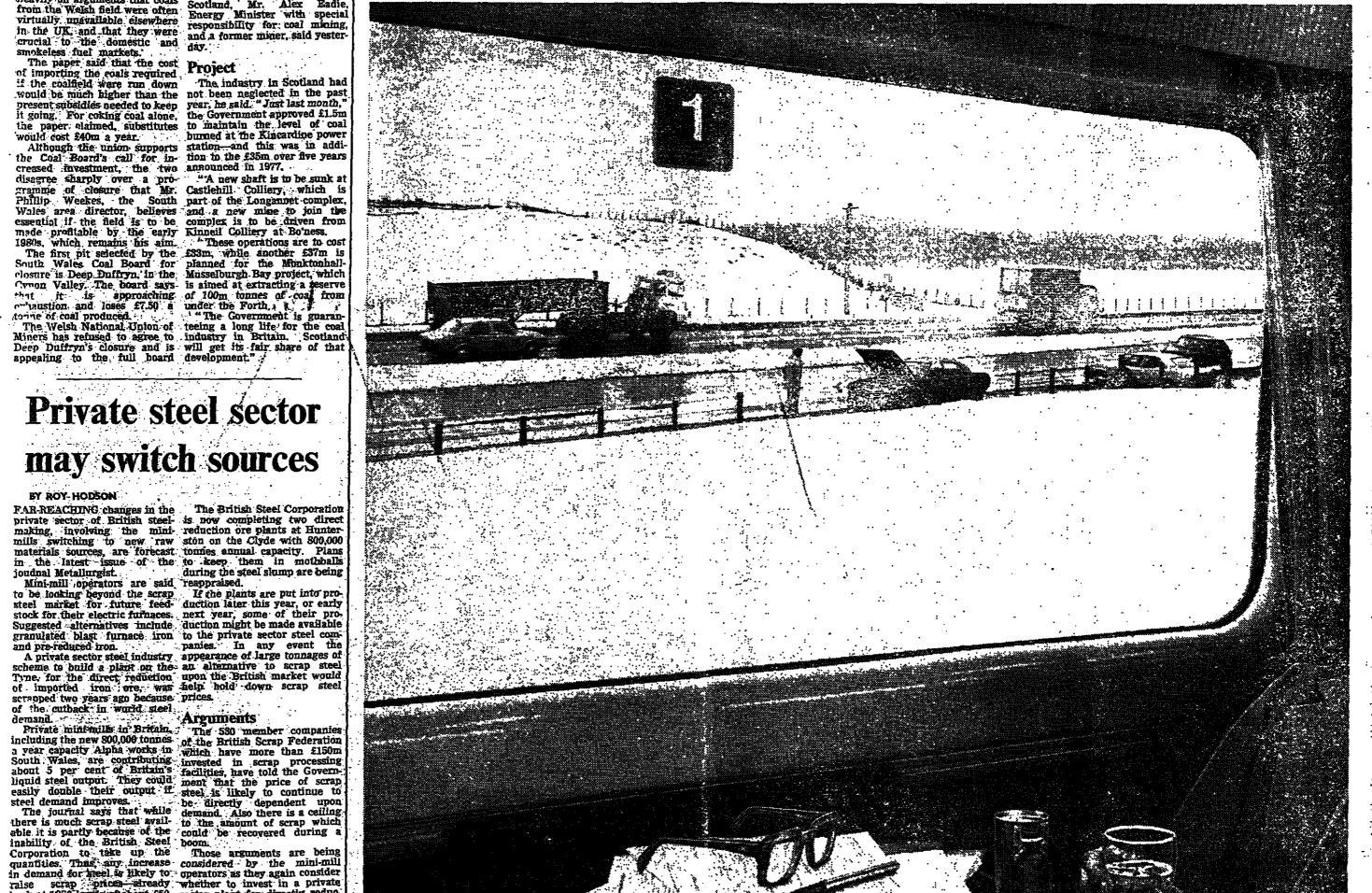
By Our Labour Staff MR WILLIAM McCALL general secretary of the Insti-tution of Professional Civil Servants yesterday attacked other union officials for taking a militant attitude on the findings of an independent pay comparability study for the Civil Service before the findings were

fully known. Sir Peter, speaking on the BBC 2 programme On The Record said British Rail had In what appears to be a reference to the Society of Civil and Public Servants, Mr. McCall suggests that premature publicity on the findings of the Pay Research Unit has done harm to the cause of the Civil Drivers on some Southern The railways, in general said Region routes are threatening a Sir Peter could look forward to

Service unions. The society has been holding regional meetings at which members have been told by officials that the Government could no longer plead ignorance to the pay differentials that have grown up between the Civil Service and private

industry. The findings of the unit, which is not empowered to make recommendations on pay levels. are still at a tentative stage but suggest that the Government might be faced with demands of up to 30 per cent, and perhaps more for some groups of civil servants.

Mr. McCall, writing in his union journal, says all the information from the unit should be analysed before industrial action is planned if the Government is not prepared to fulfil its "obligations."



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people do on motorways. It could be the decision to take the motorway in the first place. When it's the last



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Assemblies 'catching-up exercise in democracy'

quantities. Thus, any increase considered by the mini-mill in demand for steel is likely to operators as they again consider raise scrap prices already whether to invest in a private back at 1976 levels of about £50, sector plant for directly reduc-

BY ROBIN-REEVES, WELSH CORRESPONDENT ASSEMBLIES for Wales and ing its central government Scotland are a catching up exer Spain, which it was hoped cise in democracy and in con-would soon also be a member of formity with the broad frend of the European Community, now government and administration also had a constitution providin most other democratic ing for regional assemblies in countries, Dr. David Owen, the 16 regions

Foreign Secretary, said at the On the other hand, in Britain central government had grown Returning to the Land of his almost unchecked. In 1900, Fathers to address a "Wales for there had been 50,000 Civil Serthe Assembly" campaign rally vants. Today, there were 570,000 in Llandrindod Wells, Dr. Owen in organisational structures ever

pointed out that, among the more dominated by London.
EEC member States, Britain The decentralisation of these had the most centralised form areas of decision-making to of government, apart from elected Assemblies for Wales France. It contrasted unfavourably addition to democratic governwith Germany's Federal struc- ment, a major step, but a catchture which had been strongly ing-up exercise in democracy." influenced by the UK when it. It fitted in with an inter-

Building and Givil Engineering

Laing gets jobs worth over £6m

FOLLOWING THE construction of three new gaterooms on Pier of a new telescopic apron-drive 6 to serve wide-bodied aircraft jetty for each gateroom and reat London Heathrow, new furbishment of the existing moving walkways are to be in- loading bridges. New toilets between the gaterooms and Ter- level on the pier.

than £3m and has been awarded passenger waikways. Industrial to John Laing Construction. accommodation measuring 1,100 work has commenced and is due to be completed by June, 1980, in the area beneath the pier. to be phased within normal operations.

Each of the gaterooms measures 410 sq metres and 220 metres length of the pier, using aircraft on three adjoin-

Work includes the provision heating ventilation and cooling. families in 198 dwellings. to improve access are being provided at walkway

tinal 3.

The contract is worth more accommodate two new pairs of accommodation measuring 1,100 G. H. Buckle and Partners. Specification for the new

structure is steel frame on concrete foundations along the miles north west of Madrid. and wall units, and heavy result in accommodation for up single-glazed windows, all with to 900 people from military

British Airports says that the site will be screened during construction in order to reduce inconvenience to passengers.

Norman Royce, Hurley and Stewart, is tige architect and consulting engineers are Cyril Blumfield and Partners, and Spanish member company,

Laing SA, has been warded a £3.6m contract to build two blocks of flats at Valladolid, 120

Work is for the Co-operative promises to enhance the facili-ties for long-distance passengers units, lightweight concrete roof Viviendas Sta Barbera and will

The development has already started and involves the construction of two adjoining blocks of flats, one of 11 storeys and a nine-storey block and basement car parking.

Buildings are to have re-inforced concrete frames with curtain wal and facing brickwork cladding and plastered brickwork internal partitions. Flors will be of beams and hollow pot in one block, concrete reticular in the other. Also included in the contract

fitted kitchens, beating, ventilation and landscaping. Architect for the project is Alfonso Gomez Gaite.

is the installation of 12 lifts,

suggested costly air conditioning. obviated by these automatically-controlled external blinds, installed by Street and Collins of Bradford. The scheme utilises hardware, motors and controls from Solar Call for pumps as waters rise

A change in use of a 25 year old office block,

ICI Organics Division at Huddersfield,

meant the company faced excessive heat

problems due to the building's facing south

west. Problems caused by solar gain

THE EMERGENCY services of engineers Binnie and Partners. Sykes Pumps have been working of Westminster, London.
round the clock coping with The Government of Pe demands for pumps and pump-ing equipment from public authorities, industry, clubs and other private users in many parts of the country following the recent widespread flooding. One of the busiest depots was at Castleford where practically

every available unit wsa either sold or despatched on hire in less than two days after floods in Yorkshire. At Ferrybridge Power Station several Univac pumps were put to use as the rising River Aire

flooded cable tunnels and pipe ducts. Two 8-inch electro submersibles were rushed to a large waters had risen to a depth of 15 feet throughout 15 feet throughout the factory. Open-cast coal sites were similarly hit, with several special-

despatched to sites near Leeds and Sheffield. Further south, Sykes' Birseveral Velovac pumps to a local.

purpose high-lift Univacs being

construction site in Walsall where thec outractor's existing units were under several feet of

Water in

study of the feasibility of transferring water from the Mantaro River in the Amazon headwaters to the rivers flowing into feet. Pacific is consulting

switch, cartying handle and cable wind and because the pump is enclosed and water-proof, it promises ultimate appointed the British engineering consultancy which will have safety in operation. 36 expatriate engineers and specialists working in its Lima and London offices over the Uniflow Engineering, Grafton House, Hollybush Lane, Burghfield Common, Berks.

Protection Equipment, Station Road, Alres-

ford, Hants (096 273 3014). Ten blind arms, each projecting 2.5 metres, are powered by SPE type R115 tubular motors linked

through motor relays. All components, including planetary gearbox and limit switches are mounted in a standard steel

tube. Blinds are controlled automatically by the company's combined windguard and sun-guard unit actuated by a light cell and

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collective-selective simplex or

duplex command, in buildings

with up to 24 floors, can be con-

trolled by a system based on a

Box 350, 31 Hakishon Street, Bnei Beraq 51020, Israel.

(MTBF) is several times as long

Service costs are cut by

machine - room

Control of

lifts

The scheme is designed to augment water supplies to the city of Lima and also generate additional hydro-electric power. Offshore costs of the study are being financed by a World Bank loan.

duration of the study.

For all

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Aberdeen library extension

ONE OF Aberdeen's best-known buildings, the Central Library, will be extended under a £900,000 contract awarded to Abergien Construction.

The company will build a seven-storey, steel-framed extension on piled foundations, and a new mezzanine floor in the existing lending library.

Other alterations include renovation of the boiler house, installation of new boilers and equipment, replacement of the heating installation and linking the extension to the existing

£1.5m award to Bovis

The largest of two contracts won by Bovis is a £1.5m extension to Fox's Biscuit's produc-tion facilities at Victoria Avenue, Batley, West York-shire. Work involves the construction of a part two-storey, part three-storey structure to accommodate two further ovens

for biscuit production. London Transport Executive has awarded the company a contract for about £183,000 for a new tool store at its Lillie Bridge depot, London SW6. The 4,000 square feet building will micro computer.

Due to the elimination of be of brickwork construction, thousands of contacts open to part single-storey, part twothe air, and hundreds of electro- storey, with strip foundations mechanical relays, it has a high and steel and timber roof.

level of dependability, says Isralift Elevator Industries, P.O. Housing the Mean - time - between - failures engineers (MTBF) is several times as long

as usual control systems and the LESSER Building Systems (Export), of Verwood, Dorset, has won a contract worth over £im for the supply of overseas accommodation units to Saudi-

Supapac bungalows and Supaaccompanying instrumentation com office units are to be supdome (which forms a high shock which detects and pinpoints the plied to Construction Development Corporation of the Philippines which is working on the pipeline running from the desalination plant at Yanbu to Medina. Resident Engineers will live in the bungalows on

Power station site preparations

where an industrial development is now taking place along the station.

The alresh water supply to meet the company's laboratory at the company's laboratory at the station.

Bracknell. the River Shannon.

technical investigation for a of carboniferous age. It is pro-900 MW power station to be constructed on the north bank of the Shannon estuary at Kilrush in County Claro.

In addition, it will undertake compaction trials.

LEGAL NOTICES

TO THE FORMER SHAREHOSIDERS OF COMPANIA DE OIGNAMITES DE COMPANIA DE OIGNAMITES DE WHOSE SHARES WERE NATIONALISED CONVOCATION

The shareholders of Compania de Diamantes de Angola, whose shares were nationalised by Decree 51/77 Republic of Angola, dated respectively of 10th July and 25th August. The presentation of this document is not recurred for those shareholders that were present at the conference held on the 27th June, 1977. And the 22nd January, 1979, at 3.00 p.m., at "Feira Das Industrias," entrance by Rua Mecca Mousinho de Albuquerque, with the following ORDER OF THE DAY

(a) To take notice of the steps taken to safeguard the interests of the shareholders whose shares were nationalised by the decree here.

a) To take notice of the steps taken to safeguard the interests of the shareholders whose shares were nationalised by the decree here.

a) To decide about one proposal submitted of the constitution of one new company with the assets and liabilities that Companhia de Diamantes de Angola. S.A.R.L., had in Portugal:

(c) To choose the persons that will sanction the required deeds, according to the decision foreseen in the previous states of the constitution of one new company with the assets and liabilities that Companhia de Diamantes de Angola. S.A.R.L., had no required deeds, according to the decision foreseen in the previous states of the constitution of one control of the constitution of one new company with the assets and liabilities that the constitution of one new company with the assets and liabilities that the state of the constitution of one new company with the assets and liabilities that the state of the constitution of one new company with the assets and liabilities that the constitution of one decrease the constitution of one new company with the assets and liabilities that the constitution of one decrease the constitution of one new company with the assets and liabilities that the constitution of one new company with the assets and liabilities that the constitution of one new company with new company was companhia had been been company with the companhia companhia

paragraph.

The documentation regarding the posal referred to in paragraph (b) the Order of the Day of the meeting be examined at Roz Dor Fancuelros. 2nd Floor. In Lisbon, as from the January, 1979.

The proof of shareholder quality, both participate in the meeting and to mine the documentation, will be mademeans of the document evidencing the

The site is underlain by sand-

This has necessitated a geo- stones siltstones and mudstones

Kilrush in County Clare.

Soil Mechanics of Bracknell.

Berkshire, has been appointed an area of the foreshore. Trial to advise the Electricity Supply excavations are being made, Board, Dublin, Republic of both by drilling and blasting The company will and by ripping, in order to insupervise the site investigation vestigate problems associated comprising 147 borings with with bulk excavation and filling. diamond drilling and 23 trial Products from these excavations are being used in spreading and

PERSONAL

ALL THOSE WISHTING to enter the 1979 CUTTY SARK NATIONAL CROSSWORD

THE DEMAND for electricity geological mapping and a pre-in Ireland is rapidly increasing, liminary hydro-geological study rocks for the whole of the inand is particularly crucial for a fresh water supply to meet vestigation will be carried out

Life of · gas mains extended

THE LARGEST diameter polyethylene pipe produced by Stewarts and Lloyds Plastics of Huntingdon, part of the British Steel Corporation's Tubes Division, is being used to give a new lease of life to gas mains which have been in service for many

Pipe of 400mm and 500mm diameter has been successfully used to reline gas mains in INCLUDED . IN Croydon, Harrow, and Poole,

Nearly 3,000 metres of pipe, in 12-metre lengths, has been fed through mains in the three areas, extending the life of the mains at minimum cost and with the minimum of inconvenience to road users. The Croydon main lies

beneath the busy A22 Eastbourne Road, and a complete replacement involved excavation along the entire length of the main. By using polyethylene pipe to reline this and the two other

mains, lengths of up to 326 In this way excavation was kept to a minimum and interference with traffic flow cansiderably

Reed and Mallik

ORDERS WITH a total value of £1.5m have been received by Reed and Mallik, the civil engineering division of the Rush and Tompkins Group. Clients include the West Glamorgan and Buckinghamshire County Councils and British Rail. Largest order, worth £370,000, is for phase III of the harbour development at Strangaer for British Rail, Scottish Region. Work includes heavy - duty roadways and vehicle marshalling areas.

£2.5m for

awarded contracts totalling around £2.5m won by the Burnett and Hallamshire Group subsidiary, Camm (B and H), is a £1.2m trio of "term contracts" for the DOE (Property Services Agency) at RAF Wyton, Wittering and Alconbury, covering general building and civil engineering works.

Further building and civil engineering works, under a would have £498,000 contract, are for British Steel Corporation's continuous feeding scheme at Aldwarke Melting Shop at Rotherham Works.

Other jobs include work at metres at a time were inserted. Hallamshire Industrial Estates development at Garretts Green, Birmingham, and Nassington sewage treatment works at

CARRYING OUT an 18-month

ALTHOUGH SEASONALLY appropriate — it is an instant answer to flooded basements-a self-priming pump from Italianmanufacturer, Ercole Marelli, is marketed under the name "Holiday" and can be used in depot despatched the summertime for emptying or

filling swimming pools. Gardeners will be able to spray or water large areas, too, microprocessor needs only a and its easy portability (it fraction of the space required weighs only 17 lb) makes it a by conventional systems, thus not too cumbersome extra in a reducing builder's van, or for use by problems. engineers or contractors.

The pump is enclosed in a resistant cover), is powered by location of trouble-in the car, single phase electric motor, shaft, or in one of the plug-inand is capable of delivering 20 gallons of water a minute, with a head of 23 feet, or six gallons; back, says the company, as it a minute with a head of 110

type printed cards. Maintenance costs are also cut takes only two or three hours to

train personnel to use the three sites—Yanbu, Al Musayjib

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internetrim, 7,000 miles. 1977 ROLLS-ROYCE SILVER SHADOW II SALOON Chestnut with Beige Hide, 13,300 miles. 1976 ROLLS-ROYCE SILVER SHADOW SALOON

Caribbean Blue with Red Hide. 28,000 miles. 1974 ROLLS-ROYCE CORNICHE CONVERTIBLE Le Mans Blue with Black Hood and Black Hide.

1978 ROLLS-ROYCE SILVER WRAITH II without Division. Honey with Dark Brown Everflex Roof and Dark Brown Hrde, 5.500 miles.

1978 BENTLEYT2 SALOON Moorland with Beige Hide, 6,000 miles.

1978 ROLLS-ROYCE SILVER SHADOW II SALOON Highland Green with Dark Green Everflex Roof and Beige

> 1977 ROLLS-ROYCE SILVER SHADOW II SALOON Honey with Beige Hide. 13,000 miles.

1977 ROLLS-ROYCE SILVER SHADOW II SALOON Le Mans Blue with Magnolia Hide. 16,000 miles. 1975 ROLLS-ROYCE CORNICHE CONVERTIBLE

Dark Olive with Beige Hood and Beige Hide. 23,000 miles. 1974 ROLLS-ROYCE SILVER SHADOW SALOON Walnut with Tan Everflex Roof and Beige Hide. 46,000 miles.

1973 ROLLS-ROYCE CORNICHE CONVERTIBLE Black with Black Hood and Red Hide, 30,000 miles,

1972 ROLLS-ROYCE SILVER SHADOW SALOON Silver Mink with Dark Blue Hide, 39,500 miles. 1973 ROLLS-ROYCE SILVER SHADOW SALOON

Sand with Porcelain White side panels and Red Hide.

1969 ROLLS-ROYCE SILVER SHADOW SALOON Astral Blue with Light Blue Hide, 48,000 miles.

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1977 (S) Rolls-Royce Comiche Convertible Mk. II. Ivory, champagne hide and dash roll, dark brown hood. Front headrest, whitewall tyres. 10,000 miles.

1979 Silver Wraith It. Silver sand. Magnolla hide, dark brown Everflex rool with RR emblems. Front head restraints, Picnic tables. Whitewall tyres. 800 miles. 1979 Silver Shadow II. Honey. Berge hide brown dash roll, whitewell tyres. 400 miles

1978 Sitver Shadow II.-Honey over cheatnut, magnolia hide, paped in dark brown. 1,400 miles

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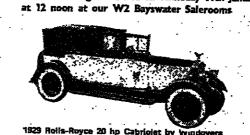
.... £34,950

1975 Silver Shadow. Cardinal red, beige hide. 14,000 miles ... £24,950

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Air France-taking off into an era of mass transport and cheap fares

BY MICHAEL DONNE



significant results, including carrying over 10m passengers in a year for the first time; and earning profits of around. FFr 200m. Had it not been for the French air traffic con-trollers' go-dlow during last summer, which severely dis-rupted the airline's activities, profits whould have been higher. The architect of this success. who will also be responsible for carrying the airline into the 1980s, is Pierre Giraudet, 59, the Government-appointed president of the airline. By training, M. Giraudet is a public works engineer, but from 1967 to 1974 was with the Paris Airports Authority, first as investments manager and then as assistant general manager, during which time he was deeply involved in the development planning of the new Paris Airport at Roissy-en-France (Charles de Gaulie). In early 1974, he was appointed by the Government as general manager of the RATP — the

Future plans

in late 1975.

Mr. Giraudet has no doubts about the problems—and his about the problems and his the market, both passengers plans to deal with them. "This and cargo, in the high-quality is a period of change," he says.
"I think the next two decades
will be the decades of mass. transport, with very big aircraft and very cheap fares, and the whole population will have have only the best aircraft," access to air travel."

But Mr. Cresuder believes the

organisation running the Paris Metro and bus services — and

he thus became the logical can-didate to take over Air France

But he does not see this move towards cheaper air travel in Europe becoming widespread for example, overall marketing until productivity and efficiency in the airline industry generally and in Air France in par-Europe becoming widespread ally, and in Air France in particular, have been improved.



competitive modernisation. available means.

"This is a general problem, but perhaps we are in the vanguard of this struggle because air transport has to cope with international competition more than any other industry. For example, 80 per cent of Air France's business is inter-national. Effectively, there-fore, we in Air France must improve our efficiency. This does not mean decreasing the staff, but increasing it at a slower rate than our activity increases, thereby improving productivity. Also, the policy of Air France will be to face up to competition in all aspects of as well as the low-fare market. We have to have the best products for every category of the market, and this is why we intend to improve our fleet, to

But Mr. Giraudet believes that other aspects of the airline industry need to be improved techniques.

"Although the problems of "For the past 30 years we the airlines may be more acute, have been using the methods they are in fact facing the and products of the men who same problem that confronts all pioneered civil aviation, and European industry—that of they did a very good job indeed.

If But, during those 30 years, there we don't intend to reduce our were few changes in methods standard of living we must and products, and now they are increase our efficiency by every no longer in tune with the modern market."

Among the new concepts he believes will be necessary are new classes of cabin service, to fit the new types of fares to be

Traffic growth

current American concept of stimulating traffic growth by increasing competition and cutting fares, but like many other European airline chiefs he is opposed to U.S. Government attempts to impose its ways on other countries, and especially the attempt to introduce "open skies" policies in all its new bilateral air agreements. Mr. Giraudet does not think these ideas will work in Europe.

Economic conditions are not the same throughout the world. I think the American policy is a selective one. Their policy is Middle East and Africa, the over-simplified by theoreticians airline will use more of the who believe that only cominvolving such things as regularity of service, public and national interest, employment and the balance of payments in the countries concerned.' M. Giraudet places con-siderable emphasis upon Air

France's fleet planning, and he foresees the future being built the Boeing 747 Jumbo jet, and the European Airbus—the latter being the aircraft which made most money for Air France during 1978. The 747 will be used on long-range routes in three versions—a " combi " version. a capable of use in both passenger

cargo version. The normal version will itself come in two types—a high-expensive in the world," says density model with 500 seats, Mr. Giraudet. "We contend that and the other a mixed-seating version for both high and low- the most expensive and the cost fares. "We will start with most numerous aircrews. We two of the 500-seaters in 1979, could not use the 737 under At present, we are studying such conditions and still be ideas for both three-class and two-class concepts of cabin best solution was not to buy service. We have already the aircraft." introduced a new "business-class" for full-fare passengers."

In addition to the 747, the airline will make extensive use Super B4 version of the aircraft term future the new 200-seat customers," along with Luft-

We do not as yet know the exact proportions in our fleet of A-310s and B-2s," says Mr. Giraudet. "But we are studying a high-density version of the Super B4 with more than 300 seats, and we hope to have two circraft of this type in service in 1979, on such routes as Calro, Tel Aviv or Istanbul.

The airline is thinking of introducing an entirely separate low-fare, high-density traffic operation, in addition to catering for normal higher-fare offic. The operations will need to be separate, with their own sircroft, because the cheap-fare market is already developing at about 10 per cent a year, much faster than the 3 to 4 per cent growth in the normal full-fare "We have to adapt our fleet to these differentials, says Mr. Giraudet. This is only the start of the

airline's fleet changes. It will continue to use the Boeing 727s on medium ranges, because there is no suitable aircraft yet to replace it. But the airline will also eventually need to re-Boeing 737 for this, but was frustrated by opposition from its pilots' union.

The union objected to only a two-man crew on the flight deck, and cargo roles, and an all- and insisted on a three-pilot crew. This the airline rejected. "Our crews are among the most it is not possible to have both competitive. So we decided the

Efficiency

While Air France might of the Airbus. On routes to the eventually be interested in any new short-range Joint European Transport (JET) venture, developed by Airbus Industrie, petition is essential for "as it is proving very efficient such an aircraft would have to economic progress. I think the and productive." On medium-fulfil two conditions. First, it situation is much more complex, range routes the basis of the would have to be as efficient as airline's operations will be the the Boeing 737, and the pilots B-2 Airbus, and in the longer- would have to agree to two-man crews, in order to ensure Air A-310 version, for which Air France's competitive ability. "If France is one of the "launching these conditions are not met, our opinion is that we cannot buy the new aircraft."



interested in the new twin-engined Boeing 757 which has been ordered by British Air-"I don't think this aircraft interests many European airlines, because it will have about 180 seats and be very close to the A-310. It is also a place the ageing Caravelles. It narrow-body, and carries less had originally wanted to buy the cargo. I am sure it will be a narrow-body, and carries less very good aeroplane, but probably less profitable than the A-310. But we would be very interested in a smaller, 150-seat

Concorde loss

Mr. Giraudet is also concerned about the future of Concorde. "Up to the present, Concorde operations have not proved profitable. We do, of course, have a Government subsidy, but we have to accept a proportion of the loss. We would be interested to come to terms with the Government on this."

He believes that if the Government were to accept a bigger share of the operating losses, Concorde activities. " Life in the international air transport business is too difficult at the important that we must come moment for us to agree to increase our costs. We love future."

Concorde. We think it is a marvellous aeroplane. But I optimistic "because we are cannot sacrifice the long-term economics of Air France for Concorde.

Air France is not yet that of providing enough airport capacity to meet the traffic growth, and the need to improve believes, the airports problem is less serious, "because we built the new airport at Roissy-en-France just before the present traffic growth began. But in London, you have a terrible

There are other problems to be solved, such as the prospec-tive London-Paris "shuttle" tive London-Paris "shuttle" operation. "We find at the moment there are two deter-rents. The first is the terminal problem at airports. At Roissy we will not be prepared for the shuttle before 1981, and at Heathrow it will obviously be necessary to operate from the same terminal as British Airways. The second is the type of aircraft. We will have to use only large aircraft, such as Airbus or TriStar, and with large aircraft you cannot operate the same frequencies that you can with smaller machines. Obviously we will have to use the most economic and profitable aircraft available, so decithe airline could expand its sions on the shuttle must be held up for the time being. But the value of this traffic is so

Overall, Mr. Giraudet is optimistic "because we are making money. We are happy because we were profitable in oncorde."
1978. We think we could be
But apart from fleets and even more profitable in 1979. fares. Mr. Giraudet sees among I think we will improve our

Where a mild degreasing

abtraive general purpose liquid

aluminium components in vibra-

metals, OC 854 is said to have

exceptional long term corrosion

ing reperties.

Used for the deburring and

Dealing in a baffling commodity

have a special fascination for 'academics" — economists in particular. They have been having a field day since the OPEC-inspired oil crisis raised the spectre of commodity cartels for other vital raw materials. Learned papers on the prospects for cartels and ways of stabilising commodity prices have been pouring out from universities, research institutions and other centres of learning. But there appear to be certain rules to be a member of this club. For a start the paper has to be difficult for the layman to understand. Ten words have to be used when one would do, and they must include a large percentage of obscure words and phrases. Stochastic, spatial distribution and lagged endogenous variables are ideal for baffling the less enlightened reader slumbering listener.

Judged on these criteria, the latest offering — Stabilising World Commodity Markets latest a strong transation a stronger. It contains a transatlantic challenger. representative selection (16) of papers given at a conference in March, 1977 at Airlie, Virginia, sponsored by the Ford sponsored by

Foundation. The list of contributors is impressive, but unfortunately there is considerable repetition since each paper tends to cover the same subject, often in a very similar manner.

It is a little worrying to note that the first learned contributor, when carefully listing the locations of major commodity markets, is apparently unaware of the leading tin market in Penang, and includes a greater number of markets that have either ceased to exist or are of very limited importance. Some of the descriptions of past events, and assumptions about the future, would also surprise many commodity traders.

Nevertheless, for those really interested in world commodity trading, and with sufficient stamina, there is plenty of useful and informative material and some stimulating ideas and theories. Certainly no stone is

left unturned.
Only omitted are the political problems, and harsh facts of the commercial world, which will in the end decide the future of commodity price stabilisation. Stabilising world commodity narkets; Lexington Books; markets:

John Edwards

Joehnieal Lane

METALWORKING

Hardens and tempers tools and blades

Under high pressure

hardening and tempering line is will be capable of handling 12 to be set up at Howard Rota-tonnes of Rotavator blades per vator Company's Harleston fac- hour.

tory in Norfolk. It will be used for the hardening of Rotavator blades and cost cultivation tools direct from the around £150,000.

Stone Platt Fluidfire has won the order for the equipment which will comprise a fluidised bed hardening furnace, a quench tank and a furnised bed tempering furnace complete with compustion controls, pipework and re-circulation ducting.
All the jigs and mechanical handling—equipment are included in the order.

A CONTINUOUS fluidised bed paratively small floor area and

It is designed to handle both steel Rotavator blades and other forging presses. The hardening and tempering furnaces will provide constant and con-tinuous control of the quality required for this product. After leaving the tempering furnaces the blades will be cleaned, painted and finally removed for packing. The whole process will take place on a 240-ft conveyor

loop.
Stone Platt Fluid-fire is a ncluded in the order.

member of Stone Platt Electrical division of HANDLING equipment will occupy a com- Stone Platt Industries.

Fabrication of bodies for the Ant specialised three-wheeled vehicle is being carried out at BTB Engineering's Blackburn, Lancs, works with the aid of BOC's MIG welding equipment. Bodies for the Ant

range from tipper refuse collectors and water tankers to milk floats. About half the output of Ant vehicles is sold to UK municipal authorities, the rest going to the Middle East, Nigeria and the West Indies.

Packs pallets fast, but with care

at 23,000 psi has been set up of the ram.
by HIP (Powder Metals) at Separate
Carlisle Close, Sheffield Road, activates rapi
Sheepbridge, Chesterfield S41 horizontal at
9ED (0246 452888) which can Separate electric motor activates rapid movement of the horizontal and vertical travel, and automatic lubrication is

The tool slide clapper is with-In the process, materials are drawn on its return stroke by consolidated by controlled pres- electro-magnetic force. The tool sure and heat which produces a head may be swivelled by 60 plastic flow of material and degrees to the right and left for angular cutting, and the tool seals voids and cavities and thus both lengthens the life of and slide swivels up to ±15 degrees strengthens the finished com- for tool adjustment.

COMMUNICATION Hydraulic Designed to answer and

SAID TO be ideally suited to heavy duty shaping operations, such as squaring up large blocks of tool steel prior to diesinking, is the hydraulic Stanko- British Post. Office approved. shaper Model 7D37, marketed by telephone answering and record-Machine Tool Agencies, Wedg- ing machines—the 6,000 series nock Industrial Estate, Rothwell -has been announced by Euro-Road, Warwick (0926: 46361). fone. The range will include

power motor and a maximum cessor controlled machines. ram stroke of nearly 40 inches. The company says the The table is 40 inches wide and machines have been designed 22 inches long with a vertical with the requirements of over-

shaper

ONE OF the more unusual ser movement of 164 inches vices now available on a subcontract basis is the production able in the range 10 to 160 feet of metal components by the hot per minute, and automatic table isostatic pressing process. cross feeds are set between An ASEA machine operating 0.008 and 0.2 inches per stroke

press out components from a provided for the slides of the wide range of metals and ram and column.

record

THE FIRST of a new range of This machine has a 13.4 horse- remote access and micropro-

criterion for packing or unstack- matic dispenser or stacker. ing loaded pallets of products contained in cartons, trays 1,320 x 1,200 mm can drams, crates or ready shrink- with a minimum ps wrapped, yet it is important 154 x 190 x 89 mm. with a minimum pack size of that no damage occurs to the packaged product.

production methods and high speed packaging lines is a high duty, low level palletiser/ depalletiser whose specially designed hydraulically powered slat aprons maintain gentle transfer of units from layer formation to the pallet, thus prerenting disturbance to the product, even at higher speeds, says W. and C. Pantin. Centre Drive, Epping, Essex, CAI16 4JL

Keeping pace with modern

machine has two The hydraulically powered platforms moving vertically on a sturdy, compact framework and can be programmed to form layers in multiple pattern formation to suit the size and shape of various containers. An option of the "Lo-Stak"

unstacking loaded pallets. This reverses the method of operation by removing each layer and unscrambling the pattern before discharging the units.

HIGH SPEED seems to be the incorporating either an auto-Standard pallet sizes up to 1.320 x 1.200 mm can be handled

> The equipment is available with either solid state pro-grammer and logic controls or microprocessor system

Gives speedy ascent

TWO MAIN features of an aerial work platform called the flow and will signal relays to 355 JLG Sizzor are drivability activate sampling systems at and simplicity, says JLG Industries (UK), 5 Greens Road, Blairlinn Industrial Estate, Cumbernauld, Scotland (02367 21183). . The platform has a maximum

capacity of 2,000 lb, is drivable at its maximum extended height of 35 feet and is diesel powered. All lift movements are controlled from the platform, is available for automatically although the auxiliary ground level controls can also raise and lower the position of the work platform. There is a single control for forward, reverse drive and steer, and the unit Included with each option of can travel at a speed of up to the machine is a pallet magazine three miles per hour.

ENSTRUMENTS

Measures the flow

FLOW OF liquids and effluents through open channels or across weirs can be accurately monitored with a new non-contacting flow meter. The adjustments within the flow meter are extremely simple and it can be installed and calibrated in either a new or existing location, within 30 minutes. The meter is to be marketed

in the UK by Hymatic Industrial Controls, a member of the Huntleigh Group. It consists of a transducer, which senses head across a weir or through a channel, and gives an output to solid state electronics which then produce a milliamp output proportional to flow rate. The meter will also compute

and give a read out of totalised pre-determined increases in total flow. An accuracy of plus or minus 0.5 per cent can be head 20411). achieved over a wide range of flows from 0.3 to 85m gallons per is of the rapid gravity type and

Since the device has no moving paris and is not in contact with the process fluid, it is suitable for continuous use with aggressive acids and in dirty applications where solids may be incorporated in the fluid stream.

Hymatic Industrial Controls is at Orchard Street, Redditch, 280mm deep sand bed and convenient transfer of spent worcs. B98 7DP. (75 67841). operates at a head loss of carbon to regeneration.

Degreesing compound OC S51.

also non-abrasive, is well suited to ferrous metals as it contains a rust inhibitor. It is contains a rust inhibitor. At these new liquid com-for use where an "in-tub" All these new liquid com-degreasing cycle of heavily pounds are fully compatible with all other liquid compounds

prior to a follow-on process, and in its OC 850 series, says the

Seeking British goods

RESEARCH AND development using the Osro compound unit

House, Mark Road, Hemel action is necessary as an integral Hempstead, Herts (0442-42181). part of the process cycle, OC 852 It has announced several new is said to be ideal. A non-

used in all types of barrel, compound for all metals, this vibratory and rotary finishing promises excellent results on

high energy finishing machines surface improvement of ferrous

into new compounds is its con- is required.

tinuing policy, says Osro, Trubro

liquid compounds which can be

Non-abrasive, OC 850 is said

to be particularly suitable for

where a heavy cut-down opera-tion is required. It also gives

a high degree of protection

from corrosion on ferrous

metals by conventional inhibitor

applications:

merbanisms,

for British-made toys, hardware. UK on January 28 and Feb-

ment programme under which companies are encouraged to each group to discuss possibili-seek products that can be manu-factured in the province under Ontario of British products are factured in the province under licence for distribution through-

TWO Canadian missions looking the toy and gifts industries. The 10-member February and gifts products, arrive in the trade mission, is searching for hardware and gift products related to door closers, tool Both are sponsored by the boxes, tools, plumbing and heat-Government of Ontario under its ing items, cookware, fireplaces, industrial and trade develop- and metal leisure products.

Meetings with members of being arranged by the Ontario out North America.

The group arriving in late

January includes representatives
of 11 manufacturers active in

Ministry of Industry and
Tourism's UK office at Ontario
House, Charles II Street, London, SWIY 4QS. (01-930 6404.)

PROCESSING

Filtering the water approximately 150mm, When

EQUIPMENT which has been used for many years in a wide variety of municipal and industrial water and effluent treatment plants in the U.S., has now been introduced to the UK and European market by Environmental Elements Kingdom), Nicholson House, Nicholsons Walk, Maidenhead, Berkshire SL6 1LD (Maiden-

The automatic backwash filter day regardless of variations in can be used with various types ambient temperature, it is of substances, such as sand, activated carbon, or a mixture of sand and anthracite. Normally supplied in kit

form, the filter is said to combine highly efficient filtration with low head loss, low power consumption and completely automatic backwashing with no less of capacity.

Standard sand filter has a media removal system for the

the head rises by 50-75mm, the filter automatically commences a backwashing cycle which consists of the travelling gautry, complete with backwashing pumping system, travelling along the length of the filter and cleaning a 200mm wide area of filter bed at a rate of 560mm per minute.

When the cleaning cycle has been completed, the gantry parks and awaits the next instruction to commence cleaning, this time in the opposite direction.

Dual media and activated carbon versions each have media beds up to 1,170mm deep and operate in a similar manner to the standard sand filter.

In the case of the activated carbon filter, the travelling gantry can be provided with a

Atlas Copco New liquid compoundf compressed air systems.

A force put to work for you.

> Atlas Copco ir Systems Technolor Consessions To Cor

COMPUTING

ponents may be left in the wet Lowers cost condition for considerable period of time after processing. the compound is not rirsed away. When used with vibratory/barrel processes it should give a very clear, bright firish. of wordr processing

WS200 word processing computer systems and a new single/ dual user system, the WS80 have been launched at Syntopicon VL the word processing exhibition that gathered at the Gateway Convention Centre in St. Louis, U.S.
The WS200, with maximum

storage exceeding 8,000 pages, is market demand for a low cost per terminal system.

WS200 configurations range up to the WS248 system with eight terminals and four printers, bringing per-terminal costs as low as £5,816. The WSSO single/ dual user system starts at £11,130 with the cost per terminal of a two-user system £7,625. Deliveries are scheduled to begin in January 1979.

This development is expected to foster the work group concept, whereby document processing is carried out efficiently by several users who share a central docu-ment bank. For example, corporate counsel can monitor the development of complex con-tracts; executive and secretary can share telephone logs and correspondence files; or large tasks can be subdivided within a work group to spread out peak

A new VT100W word processing video terminal has a detached keyboard, double-width and height caracters, smooth scrolling, and a variety of vers functions-reverse video bling ing and underlining, and normal

video at dual intensity. WS200 systems use a storage medium, the RLO1. removable-cartridge disc unit. which stores up to 2,000 pages. of text per cartridge. Systems will accommodate up to four RLO1 units for a total of 8,000 pages of new and pre-stored text, abbreviations, lists, and system software. Storage is supplemented by a dual-drive flexible disc unit for up to 250

pages of additional space. Digital Equipment Company, Digital House, 252 Kings Road, Reading, Borks, 0734 583555.

LOMBARD

8

Big can also be beautiful

BY GEOFFREY OWEN

and the courts are supposed to 13, strictly speaking, irrelevant.
2 Yet in practice the sheer size f companies has been and continues to be a matter of concern

During the 1960s there was Anxiety about conglomerate mistaken they will pay the mergers, which were outside penalty—in the marketolace. the antitrust net because they did not directly affect com-petition, but were thought to ate size any more "emotional" recent example is the proposed tion (sales of \$3bn).

Attacked

Some of these deals have been attacked on antitrust grounds, but officials in the Justice Department evidently feel that ing; they are preparing legislation which would allow the Government to prohibit most mergers involving assets or sales of \$2bn or more.

Whether anything will come of this proposal remains to be seen, but it is an interesting example of how competition policy can get entwined with a general concern about economic power. In an extreme form this can take the form of trying to preserve small companies and fragmented industries for their own sake, ignoring any efficiency gains that might result from ment is that on performance the creation of larger groups. An grounds the large vertically inindustry in which there are ten competing firms, none with more than 15 per cent of the market. is thought to be better, an social grounds, than one consisting of of small-scale competitors. four companies, the largest with The awkward fact is that 40 per cent. There have even been proposals that oligopolistic tition and concentration is far industries should be concentrated" in such a way that no company could ever hold more than 12 per cent of the

theoretical ideas have been con- balance between large and small recommendations to congres- anti-merger policy one surely laws themselves have been applied with a fair degree of it possibly be, to quote one about the size and influence of economic hoax in history "?

† Indicafes programme

of Praise 2.53 Regional News

3.55 Play School. 4.20 Maxidog. 4.25 Jackanory. 4.40 Playhouse.

12.45 pm News. 1.00 Pebble

England (except London).

"MERE SIZE is no offence." the largest corporations. This principle, enunciated as would like to break up IBM and far back as 1920, has always General Motors into smaller been a cardinal element in the pieces; if that is not possible. U.S. antitrust laws. In con-they want to ensure that he U.S. antitrust laws. In con-sidering merger proposals, for Motors dimensions are created example, the antitrust agencies Motors dimensions are created Yet if the Eaton-Firestone

concern themselves with their merger, for example, does not impact on competition; whether reduce competition in the markets in which the two comthe acquiring company has a markets in which the two com-turnover of \$50m, \$500m or \$550n panies operate, it is hard to see any economic grounds on which the Government could object to it. The two managements evidently think they will do a better job for their share-holders and their customers as a result of the deal; if they are

But one is left with a nagging contribute to an excessive than concern over competition concentration of power. Conitself? Anti-trust policy in the glomerate mergers then went U.S., as in the UK, has been out of fashion, but in the past based on the assumption that year or so there has been a competition between a number remarkable revival of the very of companies is more likely to large take-over or merger; a induce desirable economic performance than concentration. union between Firestone (sales Thus a merger between com-of \$4.3bn) and Eaton Corpora- pany A, with 20 per cent of the pany A, with 20 per cent of the market, and company B, with 15 per cent, is generally pro-hibited unless the impact on competition is offset by compelling industrial or technological arguments. These arguments are notoriously difficult to substantiate; investigattheir powers need strengthen Commission in the UK, have to balance an apparent lessening in competitive pressure against highly speculative forecasts about future efficiency gains.

Inconclusive -

Some critics believe that conventional antitrust policy pays far too much attention to the forms of competition, particularly price competition, and not enough to performance-cost reduction, innovation, productivity and so on. Their argutegrated company, with a dominant and even growing share of its particular market, is in many sectors preferable to a number

The awkward fact is that the empirical evidence on compefrom conclusive. Perhaps this means that antitrust has to rely less on economic than on noneconomic arguments such as the need to ensure the diffusion For the most part these of power and to preserve a lectual basis than this. Could

As you were at the Parole Board

TO THE uninitiated the resignation of Lord Harris as Minister of State at the Home Office to become chairman of the Parole Board looks like a piece of blatant self-appointment; the more so since for the past four years he has been the Minister responsible for prison administration and in par-ticular for the workings of the Parole Board. But if the Home Secretary's selection of his junior Minister to fill the vacancy of a crucial institu-tion within the prison adminis-tration is open to that kind of objection, there is much more

That the prison system is in crisis was amply demonstrated by the setting up by the Home Secretary last November, in a state of high urgency, of an independent commission of inquiry under the chairmanship of a High Court judge. For some time prison officers have been in ferment over their pay and conditions of service, aggravated by the growing inmate population leading to overcrowding of almost all our penal

One of the basic ingredients of the discontent is their precise role in the modern penal system. Disillusionment over efforts to rehabilitate prisoners plus public demands for tighter security and containment of

establishments.

inmate relationships difficult.
The Parole Board was set up by the Criminal Justice Act, 1967; it had a thoroughly prag-matic foundation, in that it was conceived as a sensible method for reducing the prison popu-lation. Its authors cared little for, and paid no attention to. the philosophical objections to a system that gave fresh arbitrary powers of release to the executive over prisoners sen-tenced by the courts.

For a variety of reasons parole-has been at best only a qualified objection, there is much more success. It has meant that to the appointment than that increasing numbers have bald political manoeuvre. than otherwise would have been the case-but at what cost? One of its defects is that it has introduced a new element in staffinmate relationships that has fed the current discontent among both prison officers, and prisoners. Hopes raised by the prospect of early release have frequently been dashed, to the accompaniment that prison staff are responsible for failure.

It is at this point—ten years on from the beginning of parole -that the new chairman must have the complete confidence of the prison service if further worsening of staff-inmate relations is to be avoided. Any suggestion that the new appointee might strike out on a radical rethink of parole policy. new policy that ostensibly Penal

plaints made by prisoners of the time system, preterably by the pursue a poncy of moderate workings of parole would serve Heme Secretary's Advisory reform, he will, however, find council on the Penal System. The prison service.

But each approach has been difficulty rebuffed. Live Harris could be no more appropriate been associated with if not choice to succeed Sir Louis necessarily himself sympathetic Petch, the former chairman, to, such official stiguides. Petch, the former chairman, to, such official stiguides that lord Harris. Not only is The more radical critics of the horoughly familiar with the parole system assert that prison The judiciary generally been a disagreement over

THE WEEK IN THE COURTS

BY JUSTINIAN ...

prison service prison system over the past few years. He has visited penal establishments widely and made contact with both staff and prisoners. If anyone could be said to have the confidence of between prisoners. That move the prison service, Lord Harris ment can hardly be advanced by has all the qualities for achieving just that.
But there will be no corres-

ponding cheer from those concerned generally with penal affairs. On this score Lord a number of handicaps, not least of which has been the reluctance of the Home Office to envisage a

contemporary problems of the sentences should be served in the courts. Over the years the prison service—but he has also custody, subject only to a remise judges on the Parole Board shown himself to be an adroit sion of a fixed proportion of the administrator, sensitive to the sentence; and that the privilege issues that have bedevilled the of earlier release by way of parole licence is giving to the executive too much power in interfering with the courts' decision, and is moreover discriminatory in its application as Lord Harris's appointment to

the chairmanship.
The more moderate reformers, likewise might not find and gauged whether the public too much comfort. No one would tolerate early release; doubts the liberal instincts of These cases have not exclusively Lord Harris; he is acknowledged to be on the intellectual but also those who have com-Right of the Labour Party and mitted very lucrative, nonshares with that segment of violent crimes. Labour politicians a distinctly radical approach to issues of with the mood of penal re- hardly be helpful.

The judiciary generally accepted the principle of parole initially, with some hesitation, but later embraced it wholeheartedly because it perceived its ability powerfully to in-fluence the extent of any impact upon the sentencing policy of have influenced a system that. strikes a balance between the sensible early release of good risk prisoners and a denial of the privilege to prisoners who represent a risk of repeated crime as soon as they are released. In carrying out this policy the Board has indulged in a good deal of re-sentencing. that is to say, the Board has looked at the offender's crime for which he was imprisoned involved dangerous prisoners,

accommodated the varied company advocating at least a review of social policy. If his aim is to formers, wants to move in the plaints made by prisoners of the title system, preferably by the pursue a policy of moderate direction of granting release workings of parole would serve Home Secretary's Advisory reform, he will, however, find solely on the basis of the likeli-only to alienate further the Council on the Penal System, that his ministerial background hood of further crime in the

been a disagreement over whether the Board, in turning down a prisoner's parole, should state explicitly the reasons for denying him parole. The Home Office has undertaken an experiment of giving reasons; the results have not convinced the opponents of stating reasons that it would be either wise or practicable for the Board to state why it refused to grant parole. Here again Lord Harris's association in the recent past with official disinclination to go ahead with a scheme of giving reasons will not encourage reformers to think that his chairmanship will radically alter the nature of parole. The conclusion of the cogno-

scenti will be that, far from the appointment of Lord Harris being a case of political nepotism, it is a subtle choice to ensure continuity in official policy towards parole. Nothing much will change, and that for a penal system that is showing If Lord Harris, in conformity all the signs of strain can

THEATRES

Contrasting publications for the connoisseur

AT A TIME when racing is comparatively dead-even without £2m at that point, even if he to each stallion that it was not the added problems of a freezeup—many of the sport's 2,000 Guineas But on potential followers will be pleased to you could put an extra million learn that the Sean P. Graham pounds on his head at least, Racing Annual is again with us. The 1978-1979 annual runs to nearly 300 pages and, although not cheap at £2.50, it strikes me as well worth the outlay.

The 30-odd articles include fascinating pieces on the Try My Best saga and on J. P. McManus, one of Ireland's most flambuoyant post-war gamblers. Few people may remember that Patrick Gallagher, the 27year-old managing director of the Gallagher Group, paid £750,000 for a quarter share in Try My Best early last year and the story relating to how and syndicate is explained fully for the first time to my knowledge.

Reflecting on the transaction, Gallagher comments "Looking back on the negotiations that led up to the final clinching of the deal. I realised that Vincent fined to academic studies and companies. But for a forceful O'Brien, Robert Sangster and the others in the syndicate sional committees; the antitrust needs a more convincing intel- would have seen no point in selling unless they got somepragmatism. But the antitrust American economist that "anti- in the Classics-his potential I enthusiasts remain unhappy trust has been the most durable mean, on top of his basic value at the moment.

were to finish nowhere in the that is a tag of £3m. Had he gone on to win the Guineas, I I estimate he would be worth £4m, definitely. And if he had taken the Epsom Derby as well his value would have jumped to

RACING

£7m, possibly £8m. And after

BY DOMINIC WIGAN

that you had the Irish Sweeps why he bought into that Derby and if he had maintained syndicate is explained fully for an unbeaten record, the sky was the limit. I saw him as the finest colt-since Nijinsky."

The Sean P. Graham Racing Annual is available through W. H. Smith and other leading bookstores.

ing, but for a different group A possible criticism of past

"As I saw it, he was worth crammed into the page allocated always easy to read.

Now, in the register for 1978 (£15.75 post free from 55, Curzon Street, London, W1), two pages have been allcoated to every stallion, which not only allows space for much improved lay-out, but also has permitted the compilers to include extra information.

In particular, there is considerable added detail about the tail female line, with principal performances and winners, each stallion's racing career is now set out tabular style for easy reference. .

Volume XXXII is a necessity for most practical breeders who have to arrange matings, as it is the only standard work of reference which allows one stallion to be compared with another.

Full pedigrees to the fifth generation, with particulars about ownership are the most vital features. In addition there are a number of indexes which Another publication which is cannot be found elsewhere. For likely to make absorbing read-example, the 156 leading ing but for a different group stallions featured in the book, selling unless they got some- of readers, is the Register of are specially indexed under thing for the colt's prospects Thoroughbred Stalliens. their own sires. Another index their own sires. Another index shows horses and mares with editions of this work was that two or more generations in the so much information was stallion pedigrees.

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ACROSS

cunning surroundings (6)
4 Plausible gambles about a O Girl has a fellow to tea, we

hear, but remains unyielding

perhaps (7) (2 Knocks about the yard (4) 3 Prosperous, unlike Achilles

5 A girl to see in the French

1 Island finds chemical firm in 1 Counterfeit diamond as a national emblem (8) 2 Counterfeit glass, we hear, in which is drink (9)

DOWN

3 It is baked—show intelli (7)
11 Get together with a nice mob perhaps (7)
12 into something special (8) 6 To make amends the committee and the writers had a

meal (10) A college window (5)

5.05 John Craven's Newsround. 5.10 Blue Peter. Wales—1.50-2.05 pm Pili Pala. 5.40 News (London and South—East only) Wales Today. 6.50-7.20 Heddiw. 5.55 Nationwide 11.45 News, Weather for Wales. Scotland—5.55-6.20 pm Report-ing Scotland. 11.45 News. 6.20 Nationwide

6.50 Question of Sport 7.20 The Rockford Files 8.10 The White Tribe of Africa 9.00 News 9.25 The Monday Film: "The Carey Treatment"

11.05 Tonight 11.45 Weather/Regional News Ali Regions as BBC-1 except

Weather for Scotland.
Northern Ireland 3.53-2.55 pm
Northern Ireland News. 5.55
Scene Around Six 6.20-6.50 Land 'n' Larder. 11.45 News, Weather for Northern Ireland.

England—5.55-6.20 pm Look East (Norwich); Look North (Leeds, Manchester, Newcastle): Midlands Today (Birmingham); Points West (Bristol); South Today (Southampton); Spotlight South West (Plymouth).

BBC 2

10.30 am Multi-racial Britain. 11.00 Play School
2.30 pm Craft of the Potter
3.00 That's the Way the Money

Goes 3.39 Delia Smith's Cookery Course 4.00 Modern Language Teaching

7-earning 6.55 The Water Margin 7.40 In the Post 8.05 Mid-Evening News 8.15 Marti Caine 9.30 The Body in Question 10.20 Arena

11.00 Late News 11.10 Cricket: Fourth Test (highlights)

LONDON · 9.30 am The Shadow. 10.00 Lanigan's Rabbi. 11.35 Survival. 12.00 The Wotsit From Whizz-Bang. 12.10 pm Daisy, Daisy. 12.30 The Cedar Tree. 1.00 News, plus FT Index. 1.20 Thames News. 1.30 About Britain. 2.00 After Noon Plus. 3.20 Raffles. 4.20 Clapperboard. 4.45 The Lads. 5.15 Batman.

6.00 Thames at 6 6.35 Crossroads 7.00 The Ken Dodd Laughter Show
7.30 Coronation Street 8.00 Feet First 8.30 World in Action 9.00 Danger UXB 10.00 News RADIO 1

meal (10)

A girl to see in the French
Riviera resort (6)

This house is underground but shelters a Lord Mayor
(7)

Boss takes ten to the workroom (6)

Prosaic, and avoids the highway (10)

Spicy mark of authority (4)

Spicy mark of authority (4)

Fig. 23

Plant for underhand essayist
(7)

When tempers become thus, there may be an outburst (6)

When tempers become thus, there may be an outburst (6)

meal (10)

A college window (5)

Set horses when the river rises in the streets (6)

Extreme, so to speak (5)

Reduced prosperity may approach from Iceland (10)

Radic prosperity may approach from Iceland (10)

Settleme, so to speak (5)

Reduced prosperity may approach from Iceland (10)

Settleme, so to speak (5)

Reduced prosperity may approach from Iceland (10)

Settleme, so to speak (5)

Reduced prosperity may approach from Iceland (10)

Settleme, so to sp

10.00 Monday Night Film:
"Vanishing Point"

12.15 am Close: A painting by
Leonardo da Vinci with music by J. S. Bach All IBA Regions as London except at the following times:— ANGLIA

ANGLIA
9.30 am Animeted Classic. 10.25
Thomas and Sally. 11.15 Royal Maundy.
11.40 Oacar. 11.55 The Sweet Sugar
Doughnut. 1.25 pm Anglia News. 2.00
Houseparty. 2.25 Monday Film Matines:
The Invasion of Johnson County."
5.15 University Challenge. 8.00 About
Anglia. 10.30 Feature Film: "The Loved
One." 12.40 am Reflection.

A TV

ATV. A. I. Y.

10.15 am Something Different. 110.30
The Golden Age of the Cinema: "Things
To Come." 1.20 pm ATV Newsdesk.
5.15 Oh No! It's Selwyn Froggitt. 6.00
ATV Today. 10.30 Laft, Right and
Centre. 11.00 Our People. 11.30
Barmaby Jones.

ATV Today. 10.30 Left, Right and Centre. 11.00 Our People. 11.30 Barnaby Jones.

BORDER

9.30 am The Undersea Adventures of Ceptain Nemo. 9.35 A Disry of Civilizations. 10.25 Thomas and Safly. 11.15 Royal Meundy. 11.40 Oceac. 11.55 The Sweet Suger Doughnut. 12.20 pm Border News. 2.00 Houseparty. 12.25 Matinee: "The Sun Never Sets." 5.15 University Challenge. 6.00 Lookaround Monday. 6.20 Cartoon Time. 10.30 Lete Film: "Twilight People," 12.00 Border News Summary.

7.40 In the Post
8.05 Mid-Evening News
8.15 Marti Caine
9.00 Monty Python's Flying
Circus
9.30 The Body in Question
10.20 Arena
11.00 Late News
11.10 Cricket: Fourth

12.00 Border News Summary.

1.18 pm Channel Lunchtime News and What's On Where. 2.25 The Monday
What's On Where. 2.25 The Monday
Mannee: "The Return Of The Gurffighter." 5.15 University Challenge.
6.10 Spiderman. 10.28 Channel Late
News. 10.32 Country Style. 11.00 The
Hontor Film: "A Study in Terrors."
12.40 am Channel Gazette followed by
News and Weather in French.

GRAMPIAN GRAMPIAN

9.25 am First Thing. 9.30 Terzeh.
10.25 Thomas and Sally. 11.15 Royel.
Maundy. 11.40 Oscar. 11.55 The Sweet
Sugar Doughnut. 1.20 pm Grampian
News Headlines. 5.15 University
Challenge. 6.00 Grampian Today. 6.10
The: Electric Theatre Show. 10.35
Religionous. 10.35 The Monday Fine:
"The Hot Rock." 12.25 am Grampian
Late Night Headlines. GRANADA

GRANADA

9.30 am Sesame Street. 10.25
Survival. 10.50 Valley of the Dinosaurs.
11.10 Look at Lije. 11.20 Untrimed
World. 11.45 A Handful of Songa.
1.20 pm Dodo. 2.25 Monday Metines:
"McNaughton's Daughber. 5,10 What's
New. 5.15 Crosaroads. 8,00 Granads
Reports. 6.30 Happy Days. 10.30
Mystery Movie: McCloud.

HTV

The Lew Game. 10.30 Star Sound. 11.22
Brian Matthew introduces Round Midnight including 12.00 News. 2.002.02 am News Summary.
RADIO 3
4.55-7.05 am Cricket: Fourth Testinght including 12.00 News. 2.002.03 am News Summary.
RADIO 3
4.55-7.05 am Cricket: Fourth Testinght including 12.00 News. 2.05 News. 2.05 News. 2.05 News. 2.05 Morning Concert (\$). 3.00 News. 9.05 This Weak's Composert Henry Parcell (\$). 10.30 Saint-Saens: (\$). 10.50 Kingla Lynn Festival 1978 (\$). 10.50 Republication (\$). 2.00 Music for Orgae (\$). 2.35 Metinee Musicale (\$). 3.36 News. 6.36 At Home (\$). 7.30 EBU Concert from Vienna, part 1: (\$). 8.30 American Theorys. 2.50 Republication (\$). 11.25 January and the Rise of European Music. 10.05 Rimsky-Korsekov (\$). 10.30 The Britain (\$). 11.55-12.00 News.

RADIO 4

Report Weles. 10.35 The Monday Film: "The Triple Echo."
HTV Cymru/Wales—As HTV General Service sxcept: 1.20-1.25 pm Penawdau Newyddion y Dydd. 2.00-2.25 Hamdden. 6.00-6.22 Y Dydd. 8.20-9.00 Yr Wythnos. HTV General Service except: 1.20-1.30 pm Report West Headlines. 6.22-7.00 Report West. SCOTTISH SCUTTISH

9.30 am Operation Skua. 10.25
Thomas and Sally. 11.15 Royal Maundy.
11.40 Osear. 11.55 The Sweet Sugar
Doughnut. 1.25 pm Naws and roadand weather. 5.15 Cartnon. 5.20 Crossroads. 6.00 Scuttant Today. 6.20
Crimedesk. 6.30 Sale of the Century.
10.30 From the Top. 11.00 Late Call.
11.05 The Detectives: Columbo.

SOUTHERN 9.30 am Speca 1939. 10.25 "Lucas Tanner." 11.40 Oscar. 11.55 The Sweet Sugar Doughnet. 1.20 pm Southern News. 2.00 Houseparty. 2.25 Monday Mennee: "I Was a Male War Bride." 5.76 Sinbad Junior. 5.20 Crossroeds. 6.00 Day by Day. 6.45 Dick Barton—Special Agent. 10.30 Southern News Extra. 10.35 Ol' Rad Hair Is Back. 11.35 Electric Theatre Show. 12.05 am Farm Progress.

TYNE TEES 9.25 sm The Good Word followed by North East News Headlines. 9.30 Bill, Peggy, Royal and Friends. 10.00 Beach-combers. 10.25 Thomas and Sally. 11.15 Royal Maundy. 11.40 Oscar. 11.55 The Sweet Sugar Doughaut. 1.20 pm North East News and Looksround. 2.25 Family. 3.20 Generation Scans. 3.35 Cartoon Tigne, 3.50 Lessie. 5.15 University Challengs. 6.00 Northern Life. 10.30 A Twist in the Tale. 12.15 am Epilogue.

ULSTER

10.16 am The Herbs. 10.25 Thomsé and Sally. 11.15 The Sweet Sugar Doughout. 12.20 pm Lunchtime. 2.25 Kepup With Yoge. 2.55 The Friends of Man. 4.18 Ulster News Headlines. 5.15 Cartoon Time. 5.20 Crossroads. 8.00 Good Evening Ulster. 10.30 Monday Night, 10.40 Hawaii Five-0. 11.35 Bedtime.

WESTWARD

9.35 am The Time of the Hawks.
10.00 George Hamilton IV. 10.25 Thomas and Sally. 11.15 Royal Maundy. 11.40
Oscar. 11.55 The Sweet Sugar Doughnut. 12.27 pm Gus Honeybun's Birthdays. 1.20 Westward News Hardlines.
2.25 The Monday Matnes: "Return of the Gunfighter." 5.15 University Challengs. 6.00 Westward Diary and Sports Desk. 10.28 Westward Late News. 10.30 Country Style. 11.00 The Horror Film: "A Study in Terror."
12.40 am Faith for Life. 12.45 West Country weather and shipping foracast.

Week including 6.25 Shipping Iorecast. 6.30 Today; Magaanna, including 8.45 Payer for the Day, 7.00, 8.00 Today; News From the Day, 7.00, 8.00 Today; News, 7.30, 8.30 News Head-lines, 7.45 Thought for the Day, 8.45 Can't Stry Long, 9.00 News, 9.05 Start the Week with Richard Baker. 10.00 News. 10.05 Wildlife. 10.30 Daily Service. 16.45 Morning Story. 11.00 Dame Ethel Smyth, composer (profile). 11.45 Listen with Mother. 12.00 News. 12.02 Purp You and Yours. 12.27 Quore. Unquote (S). 12.55 Weether; programme news. 1.00 The World at Ons. 1.40 The Archers. 1.65 Shipping Jorecast. 2.08 News. 2.02 Woman's Hour. 3.00 News. 2.02 Woman's Hour. 3.00 News. 2.02 Woman's Hour. 3.00 News. 2.05 Altamoon Theetre (S). 4.35 Story Time. 5.00 Pat. News megazine, 5.50 Shipping Jorecast. 5.55 Weether; programme news. 8.00 News, 7.05 The Archers. 7.20 From our Own Correspondent. 7.45 The Tor Sande Experience (S). 8.15 This Susan Person. 9.30 Kateldoscope. 9.59 Weether, 10.00 The World Toright. 10.30 The Great Divide. 11.00 A Sook at Beddime. 11.15 The Fineficial World Toright. 11.30 Unforgettables. 12.00 News.

MIGEL
MIGEL
HAWTHORNE
ANGHARAD RESS
and IAN ACCILYY IN
THE MILLIONAIRESS
by BERNARD SHAW. BBC Radio London 5.0 am As Redio 2 6,30 Rush Hour. 5.00 London Live. 12.03 pm Call in. 2.03 206 Showcass. 4.03 Home Rim. 5.10 Look, Step, Listen. 7.30 Slack Londoners. 8.30 Bestithrough. 10.03 Late Night London. From 12.00—As Radio 2

London Broadcasting 5.0 gm Morning Music. - 6.00 A.M.: news, information, travel, spect. 10.00 Brian Hayss Show 1.00 per LBC Reports 3.00 George Cale, 4.00 LBC Reports (continues). 8.00 After Eight.

Capital Radio
5.00 am Grahem Dehe's Breakfast
Show (S) 9.00 Michael Aspel (S)
12.00 Mika-Alien (S) 3.00 pm Roger
Scatt (B) 7.00 London Today (S)
7.30 Adrian Love's Open Line (S), 9.00
Nicky Herne's Your Mother Wowidn't
Like it (S), 11.00 Tony Mystt's Late
Show (S) 2.00 am Pater Young's
Night Flight (S).

mary 5 1979

Cedar Walton

by KEVIN HENRIQUES

initial appearance conditioned the ear to expect something extra-special this time but in truth the latest Walton quartet and making her Scott club debut is not as impressive overall is an attractive young singer Previously its collective attack from New York, Pamela was hefty. Now it sounds re. Knowles, another of those vocal was hefty. Now it sounds re. Knowles, another of those vocal duced and not so cohesive. Also specialists who invest quality there was more exhibitation songs with a strong jazz flavour, then. Though tenor-saxist Bob Powerfully voiced with a big Berg is a strong, Coltrane range she runs the gamut of influenced player with a hard, numbers from the lusty "Dr cutting edge to his tone, he lacks the huge authority of George Coleman who was here in 1976. The absence of bassist Sam Jones is also a loss. Newcomer Tommy Dumas, with a curious, personally-railored acquistic bass with the sides cut off, does not second session she had recovered amplifier. The result is a heavier the hertic lyrics to Miles

It is exactly three years since Walton thoughtfully explored the Cedar Walton quartet first the chordal possibilities of played at Romie Scott's Then several of his own compositions it was enthusiastically and and other numbers, notably "I deservedly acclaimed as one of didn't know what time it was," the most refreshing and hard with a deep searching penetra-driving modern jazz units to tion. As an accompanist his have appeared at the club simple accents (behind bass have appeared at the club simple accents (behind bass Almost inevitably there have solos in particular) were impecbeen personnel changes since cably adept. Drummer Higgins then and the Walton group alone is worth the price of which opened on Tuesday (and admission. His dynamic shading which remains at Scott's until —watch him whisk his brushes Jamary 13) contains only two in a flurry round his almost of the original 1976 line-up, closed hi-hat—and time-keeping Walton bimself on plano and are just two facets of his imposing skill guaranteed to leave Maybe the excitement of that listeners open-mouthed.

Opposite the main attraction and making her Scott club debut Jazz" to the sophisticated Stephen Sondheim (no. not "Send in the clowns"). All too obvious nervousness during her opening set on Tresday affected the voice quality in several places but by the end of her sufficiently to confidently deliver "bottom" to the music.

The playing of the leader and late a distinctive style of her Billy Higgins stole the attention own Pam Knowles' progress on Tuesday though As a soloist will be worth watching closely.

Elizabeth Hall

Marius May

by NICHOLAS KENYON

pointed out on Saturday) this recovery was swift and efficient year's season of chamber music - Two technical points worried promoted by the agents Harri- me continuously. One (perhaps son/Parrott and Ingpen and a fault of instrument rather than Williams: in the Elizabeth player) was the pervasie uneven-Hall contains little unusual in ness of timbre across the the way of Slavonic music, strings: a move to a higher There is in the programme position on the lower strings book an essay by Max Harrison jerked the sound in a way that which (while scandalously over even May's fighly musical looking the 17th- and 18th- colouring could not disguise. century repertoire) outlines a And two, May's bursts of inten-

at all to the run-through of evening — May's tough rock-favourite nieges by bouse centred sense of humour is ideal favourite pieces by house artists which is (albeit pleasantly) occupying the Elizabeth Hall during January.

the American prizewinner in the abilities—and that is surely the right way round. The Slav con-tribution. Janácek's Fairy Tale. was dispatched with a beautiful blend of wistfulness and passion. though there was not the abso-

> National clarinet competition for young people

LASSIFIED /ENTISEMEN

RATES

"Mainly Slav" is an unpre- attacked with such unquench possessing title for a concert able vigour that a string broke series, and (as Dominic Gill in the first movement; May's

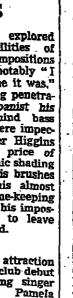
fascinating programme for a sity too often disfigured the Slav festival: sonatas by accuracy and balance of the Dussek, symphonies by Vorisek, operas by Dargomyzhsky, sonata Op 102 suffered from this orchestral music by Kalimikoff as its start, but was giberwise the best performance of the evening May's fough york. for the fierce eccentricities and quirkiness of the final Allegro.

At the piano, Craig Sheppard was reticent to a fault, making Friday's contribution to what such a point of his unobtrusive we might retitle the Not ness as to obtrude all too Slavishly Slav series was a frequently we are surely meant recital by the formidable young to hear the code of the slow British cellist Marius May, with movement in Schubert's Arpeggione Sonata (for it is one of 1973 Leeds Piano Competition, the few great moments in a Craig Sheppard. May's intelli-work which never manages to work which never manages to gence and wit at present (he is live up the promise of its first now 20) outstrip his technical eight bars). Sheppard's coolness worked best in the Beethoven, where he was admirably sharp and pointed; but in the Janacek he sounded detached, and in the Chopin, where he finally emerged from the shadows, he lute poise in the playing which did so with an icy brilliance would have made it an unbeat which seemed at odds with would have made it an unbeat which seemed at odds with able performance. Chopin's Marius May's splendidly forth-rambling G minor Sonata was right ardour.

What is said to be the first. Tyne; and for the six finalists, ever national clarinet competi- a second stage on May 16 during tion for young people is to be Ashington Festival in Northum-held in the spring by Ashington berland. The chairman of the jury will people between the ages of 17 be Denis Matthews and other and 23 who were born or are members will include Sidney living in Great Britain, the com- Fell, Timothy Reynish, David petition is offering prize-money. Haslam and Graham Evans. of £300 plus the chance of Applications for entry and full engagements with the Northern details of the competition are Sinfonia Orchestra and the area available on January 20, from

arts association for parts of Ashington Festival c/o Leisure Northumberland.

The competition will be held Wansbeck District Council, in two parts: preliminary stage April 16, 17 and 18 at the Sin Northumberland. Closing date



Hansel and Gretel The case against Hansel and last Friday; and Miss Howard sketches their mother as a good Gretel is easily made out-it has was rewarded with an woman exhausted and made

the tale, characterised in clichés, spotlight. a piece of kitsch, aimed not so much at German children as and powdered wig perhaps their nostalgic elders. Yet it helped to allay fears; lacking has gone on and on, and in a crone's rags, she could not be production as sympathetic as the that bad. However, this was Opera North the work's qualities notes. If the conventions are shine strongly through.

Leeds Grand Theatre

audience had to be taken out have studied to move and act fully gave it. of the Leeds Grand Theatre like real children. Joan Clarkson

Gretel is easily made out—it has was rewarded with an cantankerous by poverty, and no been found sentimental, sub- enthusiastic torrent of boos doubt by the feckless good humour of her husband (John elaborate for the simplicity of curtain-call, sparling in a green Rawnsley). Under David Lloyd-Jones, the Her pretty, grey crinoline

being followed, with a charm-Adam Pollock has designed ing Sandman (Susan Lees) in a neat, traditional set. The dressing gown and night-cap, broom makers' cottage is plain, with a delightful angel chorus split between their humble from local Leeds schools, with but suggesting strange shapes Less seriously, casting the Dew and half-covered fears. The Fairy (Iris Saunders) as a

Witch's cottage is a pretty, painter's mate does the same. almost oriental conceit, with But Patrick Libby's pro- fairy-tale opera. He was not Hansel's cage a kiosk like a duction is otherwise clear and alone in this (though as far prop for Oberon; and when the sensible and keeps everything as England is concerned, he Witch herself emerges, Ann moving fluently. The scenes, might have been) but he was Howard's flashing eye and when the children are dodging the most successful of those plucking hands and sinister the Witch's clutches are wittily composers tried. His score, how-relish of her music include a managed; and Hansel and Gretel ever modest its subject, earns comfortingly comic tinge. Not themselves, (Claire Powell and the youngest member of the Elizabeth Gale) sing lucidly and

score becomes much less Wag-Certainly, there are strokes of Wagner. There is a mutter from the Rhinegold giants in the forest and the Lohengrin prenew one for English National one of the few mildly jarring lude violins appear just before the Dream Pantomime, which perhaps has a touch of the Good Friday music in it (Humperdinck, after all, actually composed some scene-change music for the first performance of room and a little garden. The the parents as pipe-puffing Parsifal). But the handling of children settle to sleep in an peasant and toiling wife, then motive is not really Wagnerian, Parsifal). But the handling of Urwald, a good deal less to make the Witch quite such a and the actual use of instru-frightening than Disney's for creature of fantasy breaks the ments has a delicacy all its own. Snow White's nocturnal flight, Grimm Brothers' atmosphere. Humperdinck was really attempting to escape from Wagner's looming presence back into an earlier tradition of fairy-tale opera. He was not appreciation of its individuality and skill; and this the orchestra

Festival Hall

Terabust, Schaufuss, Connor, Jefferies

Elisabetta Terabust and Peter Schaufuss in Festival's Nutcrucker, and Laura Connor, land in a clean fifth position; Stephen Jefferies and Graham Fletcher in Fille at the Opera

fille bien élevée of quiet charm. Her dancing shares something of this same decorum, touched with a youthful lyricism in the snow-scene duet, and most delicately stated in the last act grand pas de deux (though one day Festival will come to its senses and do decent homage to Ivanov by restoring the glorious original text). Terabust gave the gentlest account I have seen of this passage; soft in grain. muted in accent, it was dancing hushed to a pianissimo—rather like a celebrated performance by Cortot in which a Chopin nocturne seemed to have no bar-lines, dynamics were almost lost

in a seamless flow of dance. From Peter Schaufuss came the beautifully poised bravura we have come to expect from this outstanding artist. The characterisation calls for a certain shyness, which Schaufuss assumes without seeming nambyparaby. In the solos, the young

presented with such finesse: double turns in the air which pirouettes, cabrioles set out with academic exactitude, but all fired and turned into the Terabust's characterisation of language of the theatre (rather Louise, heroine of The Nut- than the class-room) by a won-cracker, is a portrait of a jeune derful gift for dance. It is time that Schaufuss was

seen in London in more major roles, which will stretch him as artist and virtuoso: his promised staging of La Sulphide for Festival, and his appearances with the National Ballet of Canada at Covent Garden later this summer, are to be anticipated with pleasure. The attraction of Saturday

matinée's Fille, at Covent Garden, was of a performance of the liveliest dramatic power. The story might have been told for the first time, so fresh and attractive were the interpretations of Laura Connor and Stephen Jefferies as the lovers. and of Graham Fletcher as Alain.

Connor's spontaneity of playing, her winning delight in dancing which informs everywaltz sextet in Dances at a fonia Centre in Newcastle apon for applications is March 1. Out with splendid physical attractive Lise. And on this CLEMENT CRIS

artist who brings each of his roles to new life without distorting the spirit of either character or choreography. His Colas is exemplary, combining sincerity and fun - a fun that springs from the young farmer's personality and the dramatic situa tion, without seeming arbitrarily imposed on the text. The opening scene with Lise - Colas enjoying every snatched kiss; showing off; mooney-eyed with love—was the happiest augury

for a happy performance.

And in Graham Fletcher we had an Alain impossible to fault. The most Shakespearean Puck in The Dream, the loyal sensitive Bratfisch of Mayerling, Fletcher brings to each of his roles a clear imaginative understanding, and his Alain was a portrait of innocent good humour, with excited high spirits bubbling through his buoyant dancing. Grand per-formances; a grand afternoon.

As an apologetic post-script, I must record that it was Graham Fletcher and not Paul Benson who gave so entertaining an account of the Notary's clerk on Thursday: but no less entertainthing she does-we have but to ing was Benson's view of the recall her lovely daring in the role on Saturday afternoon, apparently a fugitive from The

Coliseum

Tosca by elizabeth forbes

appear a contradiction in terms, but the current revival of Puccini's opera by ENO at the Coliseum can best be described as tasteful. This is not to imply that the performance is pallid transparency of texture in those many portions of the score where, as in all Puccini's scores. such refinements are invited. For instance the march accompanying the arrival of Cavaradossi and the firing squad on to the platform of Castel Sant' Angelo begins really softly, allowing an inexorable cres-cendo to be built up right through to the execution itself.

Then Ian Reid, who conducts, hapes the introduction "Recondita armonia," Cavaradossi's first-act aria, with special sensitivity. Geoffrey Pogson, making his debut with the company on Friday night, sings the piece in a reflective, elegiac style very different from the anguished and passionate manner with which he recalls Tosca's kisses and caresses in the last act. His voice, keenly focused and easily produced, has an exciting ring to it at the top-he is a welcome addition to ENO's tenor roster. Dramatically Mr. Pogson is more convincing as artist-lover than as dedicated Republican, but then so are most interpreters of the role; Pucccini deals far more persuasively with human relationships than with political issues.

As Tosca, Ava June is particularly effective in the scene with Cavaradossi in Sant Andrea; she uses her jealously as a weapon in the flirtatious skirmishes with her lover, while the teasing tenderness of the exchanges between the two carries absolute conviction. Miss June can also rise to the moments of high drama; she does not need to rush around the stage or wring her hands in order to convey the depths of her suffering during the torture of Cavaradossi or to make plain her disgust and hatred for Scarpia-it is all done with the voice. She sings "Vissi d'arte ' very simply, phrasing the subsequent appeal to Scarpia's pity with touching humility. The one ingredient lacking in her performance is impulsiveness; the

Tosca and good taste may reasoning intelligence that procession Otherwise any rough makes her such a fine edges in John Blatchley's pro-Marschallin is out of place in duction have been smoothed Tosca's emotional character. Scarpia, though somewhat lack- credulous and superstitious

ing in menace, radiates a posithe distracting entrance, from share to the effectiveness of the a stage box, of the Cardinal's performance.

down satisfactorily. The minor Neil Howlett's firmly-sung roles are well taken—the Sacristan of Harold Blackburn tive relish in cruelty for its own is a small masterpiece of or lacking in guts; on the contive relish in cruelty for its own is a small masterpiece of trary, there is plenty of full-sake that is a very adequate character sketching — while blooded singing and playing substitute. If he makes less chorus and orchestra despite, in the transfer is also delicacy and impression than he might in the former case, depleted number of the former case, deplet Te Deum, that is the fault of bers, contribute an appreciable



Ava June and Geoffrey Pogson

Purcell Room

Webern Festival—5

gramme which punctuated the ("Kahl reckt der Baum" in basic Webern theme with Schubert part-songs for un-

song was never Schubert's most ted songs of the second set are rewarding field; but the Sin- surely of slightly lesser worth); fonietta unearthed some worthy gems nonetheless—a splendid Die Nachtingall" of 1821, a wonderfully luminous late 3et-ting of Schober's "Mondens-chein," and a jolly "Trinklied" that could have come straight out of Carmina Burana.

It was specially intriguing once again to hear the distilla- heard the two sets of tiny fragtion of influences in the earliest Webern: in his first known work. two brief pieces for cello and piano (the cello was Webern's own instrument), dating from for cello op. 11 — each one a 1899 when Webern was only 14, living crystal, exquisitely remarkably accomplished essays polished, perfectly formed, and shot through with a delicate perfume of Strauss, Skryabin and Saint-Saens; and in two teenage songs from 1900 and 1902, John Constable. The String Trio "Wolkennacht" and "Hochsommerpacht." the first particularly of unmistakably Wolfian bitter-sweet ambiguity, and the second, movements reversed, and with a duet for soprano and tenor. in strict canon - tonal foretaste of one of Webern's favourite later atonal devices.

The ten Stefan George songs op. 3 and 4 were originally CLEMENT CRISP songs, differently ordered, and

The fifth concert of the it was in this earlier form that in its ensemble and pacing, but London Sinfonietta's Schubert/ Phylis Bryn-Julson sang them thrown off with nice spirit and A fine clutch of dance per-panache, and—because Schau-occasion she had the advantage formances at the week's end fuss is excellently schooled—of Stephen Jefferies as partner. Ightened our frozen lives, with impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish impeccable finish. It is a rare Jefferies is, I suppose, the most impeccable finish imp Webern series on Friday even- here, including in each sequence style.

particular ties a neater knot at Schubert part-songs for unthe end of op. 3 than "Im accompanied male voices. Part-Morgentaun," and the two rejecbut Miss Bryn-Julson delivered both with impeccable roundness, warming (as she often does) a little slowly, but finally achieving in the last seven songs the simplest finest instrumental detachment and calm purity of

Of the instrumental works, we

ments which frame Webern's "m'niature" period from 1910 to 1914, the Four Violin Pieces op. 7 and the Three Little Pieces on this occasion, in fine per-formances by Nona L'ddell and Christopher van Kampen with op. 20 was another work given in its earliest "unauthentic" the addition of a reconstructed finale - interesting, but odd. uneasy effect. The well-known Quartet op. 22 for violin, clarinet, tenor sax and plano was played straight and un conceived as two sets of seven altered; an enthusiastic performance, a shade less assured

DOMINIC GILL



RUGBY UNION BY PETER ROBBINS

The Welsh formula for success

in the same period.

earned and I suspect that the certainly been badly affected. committee.

An important year in Welsh As organiser, he realised that state of the game in Wales

the appointment of a coaching Wales have a small caucus of

Williams's credentials were should be identified with the have the likes of, Mervyn scouting system.

discover reasons for their per-sistent failure over the years ampton, 11 years with the one is bound to ask why Wales one is ording to ask why wates Recreation, during which time have been so very successful he had worked extensively with the Rugby Foetball Union, and That success has been hard a passion for coaching.

No-one could tell him what to English attitude to the Welsh do because there had never has not changed since my day been an appointment like his.

—a grudging respect tinged. This freedom gave him the perhaps, with a little envy. chance to operate in all spheres What may now exist is a sense of the game and he was involved of inferiority in the English in setting up the Welsh Cup. camp, where morale has and still sits on the competitions

rugby was 1964, when Wales no one can coach 30 players at lost to South Africa in Durban once effectively and so every with what players. by 24–3. It was considered a coach to the team has been national disaster and at the assisted by Williams and Welsh AGM there as a pro-latterly Malcolm Lewis. John posal to set up a committee to Dawes called in Terry Cobner make recommendations on the for some specialised forward coaching against New Zealand Out of that committee came this season, but the point is that

organiser, Ray Williams, in men who decide policy.

1967. His primary function Both the Rugby Football was to reorganise the coaching Union and the Welsh Rugby was to reorganize the cuating Union and the weish rangoy evolution.

structure of the game in Wales Football Union set up advisory Wales were also fortunate to small clubs to the bigger and so produce well-qualified panels as long ago as 1964, but be blessed with some of the centres. The big clubs see coaches.

the Welsh decided that coaching greatest players ever seen. To nothing wrong in a football-type

been largely influenced by his thinking.

A more thorough and unmorm approach has been apparent but organisation.

But the Welsh success goes it must be said that at times accustomed to success.

demions on how to play and the community.

the opening up of the game was there for the taking given the manna to the Welsh spirit and talent, encouragement and instinct for attack. That has effort. largely disappeared, or at Talent in Wales is rarely

evolution.

AS ENGLAND struggle to impeccable—a Welsh trialist national team. Although Wil- Davies, Barry John Gareth discover reasons for their ner- fly-half, a player with North- liams is reticent about his part, Edwards, Phil Bennett, Gerald there is no doubt that Welsh Davies, and J. P. R. Williams as play over the past decade has contemporaries was a unique contemporaries was a unique gift. Players of that calibre did hinking.

not need coaching, all they
A more thorough and uniform needed was the ball and some

> the rugby has been numbingly beyond organisation, coaching unenterprising. However, it has and the greatness of certain produced success for a nation players. To really grasp the root cause one has to look at the There are several reasons for place of rugby in Welsh life. It Wales' success and the first is unquestionably a sub-culture, certainly is the thorough organi- and the ambition of the young sation they have set up for the players reflects the important establishment of patterns and position the game occupies in

> The Weish attitude to rugby The law changes in the mid- is the same as their attitude to 1960s helped Wales more than education. Like education, it is most countries. She had had a way of getting on, a passport her share of great players, but to a wider, fuller life, that is

> least been suppressed but never- missed because of the closeness theless it was a part of the of the society, and there is a natural progression from the

BOXING BY TREVOR BAILEY

Champ from the welding shop

MY ARRIVAL at the Chrysler work has provided independence known about boxing" - and, of his contemporaries, has day coincided with the afternoon tea break. A small group from a truck assembly line were enjoying the rest. There was nothing unusual

about the talk or dress of the workers I met, except that the one coloured member happened to be the reigning welterweight champion of Europe and Great strangely almost Britain: unknown Henry Rhiney.

Seeing him as just another, popular member of the workforce, I found it difficult to life. believe that this was the man who knocked out Josef Pachler with a copybook right uppercut to take the European title in December and has been British champion for the past two years.

Rhiney is softly spoken, shy, completely unmarked, shrewd and genuinely modest. For nearly all his professional career he has worked full-time in the factory, where he has never asked for or received special

favours. Although his training has had to be done in spare time, his

failed to make it in the ring, as well. he could still support his wife For J and children. Unlike so many boxers, for

whom money is "easy come. easy go," Henry has learned to appreciate real values and the need to provide for the future of his family, which is why he is still earning £76 a week as a spot welder before he meets Dave Green to defend the European title at the Albert Hall on January 23, for which he will receive the largest purse of his

Henry was born in Montego Bay and brought to England by his father when aged 15. The determination that has proved so vital throughout his boxing career enabled him to acclimatise himself faster than most. Like so many West Indians Henry was a natural games

player. He stumbled into boxing by chance when, as a teenager, he went to a Luton youth club. There he met Jack Lindsay, the boxing coach. Typically, he says:

factory, Dunstable, last Thurs- and the knowledge that, if he one suspects, much about life developed an exceptionally

the dream of every coach: a favourte punch, pupil with exceptional talent. He is a highly proficient, win through, Apart from Henry's balance

impressed Jack in the early days and convinced him that he had found somebody special was the boy's eye for distance and his ability to learn combinations of

Henry eventually turned professional and was fortunate to have as manager John Barclay. who made sure that he was not over-matched. Initially he did not make a great impression. In spite of his technical proficiency he lacked the charisma of a Dave Green

way. He is 27 and has had more than 50 fights as a pro- find a new boxing hero, who is

"Jack taught me everything I far more ringcraft than most and to his race.

sound defensive technique and For Jack Henry represented has a classical left-hand jab, his

who was also prepared to work thoroughly professional boxer, and train hard and eventually to able to out-box, out-manoeuvre and out-think his opponent. Significantly, he has won three and very fast reactions, what of his four successive championship fights by a knock-out.

Whatever the outcome between the bustling Green and the counter-punching of the elegant Rhiney, it should provide an outstanding contest. If Henry wins, his manager will be able to arrange for him either to defend his European title in France for another £20,000 or to take Green's place in a shot for the world championship.

In an era when it is fashionable to say that a mean streak is essential for a sporting champion, and where letting For Henry it was no quick the end justify the means is accepted, it is most satisfying to an honest, non-swearing, un-The long apprenticeship has assuming and hard-working meant that Henry has absorbed family man, a credit to boxing

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Monday January 8 1979

The best of a bad job

euphoria, not to say unanimity.
All four leaders were agreed on the usefulness of their conon the usefulness of their contheusefulness of their cont versations, and above all on the friendly and trusting nature of the international community, while insisting that this should not and could not be at the expense of the Soviet Union; in particular, they endorsed the conclusion of the second round Soviet-American negotiations on strategic arms limitations (SALT II), and recommended its ratification by the U.S. Senate. All in all, the event represents a significant success for President Jimmy

SALT II negotiations have given rise to serious misgivings on both sides of the Atlantic, on the ground that it might entrench a growing Soviet superiority in strategic weapons. long been the only substantive against a background of a topic of intercourse between the steady build-up of Soviet militwo super-powers. It is difficult tary might at all levels. Strate- to see any legitimate reason for gic parity is notoriously difficult the rapid expansion of Soviet tot estimate, given the qualita- military power, or to rule out tive and geographic differences of the two sides, but there are cow's strategic intentions. But strategic experts who fear that the new agreement could open up the possibility of a Soviet first strike against the U.S. In Europe there are also fears that the Soviet-American negotiations make too little allowance for European interests, to some extent in the current round, and even more in the next round (SALT III), which will more directly affect the European

Among other things, Europeans have been worried that tthe U.S. might bind itself not to provide them with advanced military technology, including that concerned with the cruise missile. As a result of these fears, the U.S. Administration has been faced with the possibility that it might be able to conclude an agreement on SALT II with Moscow, but not secure ratification in the U.S.

"Frank and open"

GUADELOUPE mini- President Carter was able to summit of France, Germany, persuade his three colleagues Britain and the United States that their assessment of the Britain and the United States has ended in a rare spirit of emerging SALT II agreement euphoria not to say unanimity.

the Soviet Union has viewed China's rapid development of their relationships. They were united in their welcome to a more international posture, and in particular its explicit fuller Chinese participation in wooing of countries which are wooing of countries which are traditionally opposed to the Soviet Union (notably those in Western Europe), with the While there remains valid

reasons for questioning whether

the SALT II agreement will really strengthen the security of the West, rather than reinforce the danger of Soviet superiority, it could be dangerous for the negotiations to break down at this stage, and perhaps even more dan-It is an open secret that the gerous for an agreement to be rejected by the Senate. Detente has long been a vogue word to describe East-West relations, but the fact remains that the SALT negotiations are and have long-standing suspicions of Mosthe U.S. can ill afford at this juncture any breakdown in the SALT dialogue which might have the effect of reinforcing Moscow's suspicions that it risked being the victim of a tacit conspiracy betwee America, Europe and China. between

Indo-China

It might have been better if the U.S. had seemed likely to conclude a more balanced SALT II agreement with Moscow, and if it had signed and ratified such a treaty before recognising China. Such a neat ordering of events was almost certainly rendered impossible by China's impatience to modernise its economy, and by America's impatience to benefit from this

What is needed now is a broader strategic dialogue be-tween the United States, the Soviet Union and China, beginning with the potentially explosive situation in south-east To judge from Mr. J. Cal- Asia. No one can be sure how laghan's remarks at the confar the Vietnamese intend to clusion of the Guadeloupe go in their invasion of Cam-summit, when he said that their bodia, but there is an undoubted discussions had been 'frank, danger that the conflict could direct and open." it may be escalate into a wider war by inferred that the European proxy, with the Chinese supleaders did not mince words in porting the Cambodians and the expressing their anxieties. But Soviet Union underpinning their it may also be assumed that recent alliance with Vietnam.

Firm line for town halls

ing of the annual pay round that shown no sign of wanting to put the local authority manual bite. workers at the head of the line of major public sector wage claims when the Government's 5 per cent pay policy collapsed. It was a fortunate one for Ministers, for if there is a major public sector claim they might are now Conservative-controlled have opted to fight it is the 40 per cent demand from the town hall workers.

Two-edged

The union side are planning a one-day national stoppage later in the month, to be followed by a series of guerrilla strikes in different parts of the country. Uncollected refuse and schools closed for lack of heating will inconvenience the public but town hall workers lack the industrial muscle of the miners or power station workers.

Efforts are being made to mobilise a united front with the hospital ancillary and water and sewerage workers, who are conducting parallel negotiations. But making life doubly difficult for the public can be a twoedged weapon, and Ministers' resolve will have been strengthened by the knowledge that behind the manual workers will come other major groups in the public sector, such as the teachers and civil servants.

There has been talk of devising some formula based upon an as-yet undefined comparability study for public service workers. But the furthest Ministers would probably want to go in this direction would be to attach a promise of comparability at some future date to an immediate settlement broadly in keeping with their

5 per cent guideline. Even then they would be well advised to avoid a formula as hard and fast as the one granted to the Gremen last year which guaranteed them for all time a particular relationship to Mr. Alan Fisher of the National sector.

IT WAS the chance of the tim- Union of Public Employees has

For the moment the Government can afford to bide its time. while the local authority asso ciations conduct the battle on its behalf. All but one-the London Boroughs Associationand the employers' stand has been additionally strengthened by the discipline of the cash

limit on the rate support grant. This was set for 1979-80 on the assumption of a 5 per cent pay limit. It is true the usual undertaking was given about re-viewing the limit in the light of changes in Government policy or substantially higher cost trends. But when the cash limit comes up for review in November the general election will have taken place and local councils will have had to fix their budgetsand their rate calls—well before then in complete uncertainty as to which Ministers they will be dealing with then or what their attitude will be to revising the

Limited crop

Local councils thus risk having to put the full cost of any settlement in excess of 5 per upon ratepayers—apart that is, from any cushion which may be afforded by their cash balances which for most councils are not lush. This discipline may be somewhat weakened in a year, like 1979, which has only a limited crop of local elections. The large rates increases which some inner London boroughs have been foreshadowing are not unconnected with the fact that these councils got their elections over last May and will not have to face the electorate again until

If the Government is determined to make a stand against inflationary pay settlements, it should announce that it will not increase the cash limit or average manual earnings in the the rate support grant if it is private sector. This could still in power in November. Cash possibly interest union leaders limits in the public sector are like Mr. David Busnett of the the nearest available substitutes General and Municipal Workers for the market disciplines which who has been campaigning for create the nexus between excesa more structured approach to sive pay increases and less public sector pay bargaining, but employment in the private

toll of British exports HE outlook for British trade in Iran is deteriorat-ing daily. Last week the Iranian Government suspended further work on a military-industrial complex at Isfahan, which had promised to be the UK's largest contract in Iran with an ultimate cost of £750m to £800m. Several other major contracts hang in the balance. Already most companies appear

to have brought home a large

proportion of their expatriate

1.200₁

The crisis has come just at the moment when trade with Iran was beginning to make a contribution to the British balance of payments. All through this decade the UK has been in deficit in its trade with Iran, reaching a trough in 1976 when British exports carried just half the value of imports -overwhelmingly oil. then, oil imports have fallen sharply as supplies from the North Sea have increased. And in the first 11 months of last year, the steady rise in UK exports to Iran brought a visible surplus of nearly £200m.

Now the level of oil imports from Iran has collapsed. And it seems certain that, for the time being at least, export volumes will do the same.

British sales to Iran last year mounted to about £ibn, out of total export figure of around E37bn. As a market for British exports, it was roughly equal in quantitative terms to that of a small European country like Denmark or of a major former colony such as South Africa, Canada or Australia. UK sales to Iran have equalled those to Saudi Arabia, and have recently compared with exports to Nigeria of roughly £1bn and to Japan of about £ibn. It has therefore joined the top tier of British export customers outside

Although it describes the current position as "very uncertain," the Export Credit Guarantee Department has not yet seen any upsurge in claims from UK exporters for non-payment. The department is keeping its credit limits open. and new business with Iran is still being done under these limits. But for longer term cover—two to five years, for instance—the ECGD is now adopting a wait and see approach. For individual UK companies,

the risks tend to be smaller than those faced by some U.S. and German groups—simply because the latter have been much more to Iran exceeded £800m, and -was establishing an expatriate staff some 3.000 strong, to work on two nuclear power stations. It is too soon to say whether than they have often tended to be already. But the breakdown of supplies and services—par-ticularly at the ports—has already brought a great deal of UK business to a halt. Inch-cape, which is the Lloyd's representative at all Iran's ports, says that by and large exporters to

EXPORTS TO 300 **IRAN** .73 *First 11 months This is presenting a major problem to Chrysler UK among others. Two ships carrying between them 18,000 of its car

IMPORTS FROM

IRAN

have reached at least 20,000. Road vehicles are the largest single category of UK exports to the first 11 months of last year -and Chrysler has the lion's share. Under an open-ended contract signed five years ago, Chrysler is scheduled to deliver around 100,000 car kits this year worth around £100m of turnover. Total sales of Chrysler UK amounted to £458m in 1977.

kits are currently in the Gulf,

and UK stocks destined for

So far there has been no short-time working or lay-offs among the 1,500 or so Chrysler UK workers involved in the

shipments

Massey-Ferguson has recently suspended shipments on a con-tract to supply \$70m of tractor components to Iran in the 12 months to next August. Its UK plants were to have provided a fairly substantial part of this successful in attracting Iranian order, which the company hopes business. In the first half of to resume "when conditions

operating.

Meanwhile, UK sub-contractors are becoming increas-

future of some very large military equipment deals with These include a £400m Tracked-Rapier anti-aircraft missile contract held by British Aerospace's Dynamics Group; a £500m-plus contract with the Ministry of Defence's Royal Ordnance Factories to build Chieftain tanks; and a £50m order for four support vessels which is under way at British Shipbuilders.

BY FINANCIAL TIMES REPORTERS

So far, work is proceeding to schedule and payments are coming through on time. But as a result of the unrest, it is reported that the Tracked-Rapier will now be built entirely in the UK and not partly in Iran. And it is open to question whether the Chieftain contract will be taken up in full. Any such shortfall would

theoretically hit the UK tax-

payer at least as hard as the shareholders of the sub-contractors involved. For instance, Rolls - Royce Motors is heavily involved in the tank contract, with an order to supply some 1,200 V12 engines. But it is believed that a substantial proportion of the development costs together with the bulk of and builders. Several say they the capital employed in the project have been paid for by the Ministry of Defence. This suggests that any cancellation would not require large writeoffs. It would only mean that the group's profits would be lower than might otherwise have been

Apart from defence sales, one company-Kraftwerk Union British Leyland) to Iran last Iran is an important but by no means crucial market for a wide range of UK exporters. GEC booked £13m of orders from this source in the six months to September, out of a worldwide order intake in this period of £489m. Clarkson International has a £im machine tool contract ready for dispatch—shipment has been postponed for the time being. Compair's construction Iran is Marples Ridgway, tequipment division, which civil engineering division accounts for two-fifths of its Bath and Portland, which sales, has sold significant building a 300 km stretch

BRITISH EXPORTS TO IRAN (First 11 months of 1978)

		Food and animals for food
	£70.7m	
	£4,5m	Beverages and tobacco
of which	£4.6m £4.6m	Materials Textile fibres
of which	£67,9m £28,7m	Chemicals Medicines
of which	£186.3m £32.9m £18,8m	Components and semi-finished products lron and steel Textile yarns and fabrics
of which and and and and and	£406.9m £91.2m £47.5m £12m £68m £20.7m £31.5m £125.8m	Machinery Power generation Special industrial equipment Metalworking machinery General industrial machinery Telecommunications and sound recording Electrical machinery Road vehicles
of which	£36,6m £13,3m	Miscellaneous manufactured goods Instrumentation
Grand tota	£64m al £705.3m	Other products, including defence equipment

Source: Department of Trade

representing almost 90 per cent

of its overseas work, is due for

together as major sub-contrac-

tors on the Isfanan complex.

heard last week that although

the £60m contract on which

they are now engaged is to pro-

ceed (completion is due later

this year) the next phase of the development has been

-The two companies have

aiready completed a £50m con-

tract at the complex and the

latest work involves the provi-

sion of main utilities and infra-

that activity on the site is now only ticking over.

development has been

mercial sales arm Ministry of Defence. IMS is also involved in another major; military project in Iran a military workshops complex representing £50m of work for the Costain Group. Work is continuing on the site, although fuel shortages and the closure of local banks have been causing problems.

Supply difficulties also played a major part in GEC's decision to suspend work on the \$57m Abwaz power station. A great deal of equipment has already been shipped and site construc-tion is about 25 per cent under way. Northern Engineering Industries has supplied one boiler to Ahwaz but has suspended work on a second. Another deal, to supply wagon. parts for local manufacture, has also been put in abeyance by this company.

The Iranian upheaval will be especially bitter news for a number of UK companies with joint venture projects in Iran that were just approaching the pay-off stage.

Repatriation of personnel

completion by the end of this. Lucas Industries has a 35 per Sir Kenneth Selby, Bath and cent stake in a plant designed to Portland's chairman, says that supply electrical components to in the last week work on the the motor industry, and had big. project has effectively been re-hopes for this fast growing duced to activities like work sector. But the froubles broke maintenance, mainly out just as the plant was about because of the shortage of to start up. It has now been put diesel fuel and petrol. He says on a care and maintenance basis that banks in the vicinity of the and Lucas's technical personnel contract have no money, making have been brought home. it very difficult to pay local. There is a similar story

There is a similar story from creditors. Payments on the con-London Brick. A joint manutract, which created problems facturing venture in which it for the company in the early has invested about £1m reached its planned output level the day, stages of the work, have been continuing normally. before the troubles began. The Laing and Wimpey, working project, which represents London Brick's first overseas manu-factoring venture, has now been temporarily closed down.

A joint venture company in which Armitage Shanks has invested about £300,000 also came. to a standstill before the company had a chance to make profits. Other companies like BOC and Foseco Minsep have made investments of a similar order in local factories, and have recently brought UK personnel: home. structure services. Wimpey says

Finally, the Iranian crisis will make a mark on Britain's "invisible" trade figures. The revenue from shipping in and out of Iran is estimated to be worth £300m a year to UK shipowners. As P and O, one of the market leaders, says glumly: The shipping scene enough as it is. This is an added burden which can exacerbate the situation."

So the present upheaval is having repercussions across a

Suspension of

But other suppliers have already had to take actions

Exports by BL (formerly year amounted to around flam. It has a minority interest in Leyland Motors in Tehran which assembles medium weight payments from Iran are in trucks and buses from UK kits, general becoming more erratic and another in Leyland Diesel which finishes and assembles engines. Both these businesses have been shut down by supply difficulties, although it is understood that an Iranian owned company which assembles and distributes Land Rovers is still

the country have stopped sendingly concerned about the

year in Iran, making it about their third biggest market in the Middle East after the United Arab Emirates and Saudi Arabia. Few contractors have experienced disruption on site caused directly by civil disturbances, but most are now facing serious problems caused by a shortage of fuel supplies

brought to a standstill, which

seems bound to have a short-

Iran has also become of major

interest to the UK's textile companies. In 1978, it purchased

some 4m square metres of

woollen and worsted fabrics from the UK, making it about

the sixth biggest export market

Among the UK companies.

tually operating on the ground

in Iran, British Petroleum is of

course much the most signifi-

cant. Formed in 1909 as Anglo-

Persian Oil, BP was still draw-ing nearly two-fifths of its crude oil needs from this source in

1977. As a result of the production cutbacks, it has had to warn customers that supplies

could be reduced by as much as

30 to 35 per cent in the first quarter of this year.

However BP has had no significant assets in Iran since the

oil industry there was nationa-

lised in 1951. Most of its

Elsewhere, the current up-

heaval is having a big impact on a number of civil engineers

are experiencing substantial

difficulties in maintaining opera-

Latest estimates suggest that UK contractors have been win-

ning nearly £200m of orders a

tions in the country.

expatriate staff have now been halted.

term impact on profits.

for this sector.

withdrawn.

Among the UK contractors with heavy commitments in Iran is Marples Ridgway, the building a 300 km stretch of amounts of equipment to Iran desert road in the south of the in assembled and kit form. country. The contract, worth Shipments have now been £105m to Marples Ridgway and

and by the closure of many

Closure of banks

The Isfahan decision represents a major loss of potential future work for a wide range of other UK companies. Machine tool manufacturers like Alfred one contract in the country. The company is due to supply deal signed last May and worth started

main contractor

broad range of UK industry and Herbert had hoped to be commerce in most cases, the involved. So had Vickers, which exposure is limited and many at present is only involved in companies are confident that the market will re-open sooner or later whatever the political outengineering to a tank testing come. Yet they are distinctly and refitting establishment in a uneasy about their existing exposure. And they have been £19m, but work has not yet forced to recognise that their ambitions in a country that at at one time seemed to offer almost Isfahan is International Military unlimited scope have had to be Services, the international coinsharply downgraded. sharply downgraded

MATTERS

Silkin bites

ing their cargoes in.

on the biscuit

This afternoon in Whitehall, light may be shed on the Great Biscuit Mystery. At the Ministry of Agriculture, the Food Manu-facturers' Panel will gather to discuss the effects of Britain's transport troubles on the national larder — thus giving Minister John Silkin or one of his colleagues a chance for solicitous words with Sir Hector Laing.

As chairman of United Biscuits, panel member Laing is one of the most powerful figures in his line of business; and last week, when the strike began, the highest-p:tched cries of alarm came from the Cake and Biscuit Alliance. There There was "saturation coverage" in the newspapers, on radio and TV, for dire forecasts from the alliance that biscuits could vanish from shop shelves in a

It just happens that Laing is the highly-regarded adviser to Mrs. Thatcher on food policy tactics. It also happens that one James Prior is on the Board of United Biscuits — and he formerly held the agriculture, fisheries and food portfolio now so possessively gripped by Silkin

Is the nation about to be brought to its knees for want of cream crackers? Or was there some tactical skill dis-played last week, thereby adding Government in general (and the "Beast of Brussels" in particular) particular)
policy?

Five-star rhetoric

Stafford, managing director of the Dorchester Hotel in Park Lane, has recently put out a clarion call to his senior staff. "Would you all try to inculcate a feeling of loyalty to our country in which we are the public has too." So he has begun in the Middle East's most



"Now we've got plenty of panic food, our panic petrol runs out!"

fortunate enough 10 live," urged his memorandom.
Australian-born Stafford went to tell how the battle against inflation could be won-by avoiding waste of anything; he mentioned gas, electricity, oil,

goods, even people. The cause of this Churchillian utterance comes as something of an anti-climax. He had seen one of the hotel's chairs standing out on a fire escape.

Hunger war

On this side of the Atlantic, we tend to think that America has little to teach us about trade unionism-perhaps we know too much already. Then consider Sam Cimaglia, the leader of New York's grave-diggers.
A strike called for the weekend would have brought all For businessmen whose travels work in the city's 62 cemeteries to a dead stop (if 'hat is the then, here is a word of warning appropriate term). The worthy Try to avoid molesting women spade-wielders want a \$76.4 in the street, smoking in

taken the matter in hand per- anarchic and over-populated sonally, by going on hunger capital. Since the start of this strike: until the issue is settled, month police have been sumhe will subsist on nothing but marily fining-and hauling off a little honey and water, three

times a day.

Of a religious disposition, he feels sure of not having to fast until he becomes a candidate for the cemetery himself. "God will be with me." Sam also has experience on his side-he tried the same tactics in 1973, and after 14 days the cemeteryowners just caved in. Their nerves could not stand any more.

Trial balance

How important are the initials of Messrs. D. R. Pelly and D. H. Johnson, vice-chairman andand secretary respectively of Barclays Bank International? I fancied there must be a serious case of armour-propre when I learnt that the bank's newlyissued annual report and accounts was partly reprinted, and the rest taken to pieces for new sheets to be inserted—just because Pelly appeared under the balance sheet as "R. D." and Johnson as "D. E."

quarter were entirely replaced, and the others expensively pulled spart

I gather that the fellows themselves were completely uncaring. But "legal requirements" caused all the upheaval-because it was deemed

Of 28,000 copies sent out, a

that the balance sheet was not precisely as signed by the auditors, and so became invalid.

Whistle stop

take them to Cairo now and week rise

Cinemas, throwing down litter,
But Sam said: "I've just had or engaging in petty extortion

a belighidiof strikes and I think A heetic clean-up campaign has

to jail if need be-offenders

against a host of local laws. Saad Mamoun, the governor of the city, says he wants Cairo to "take on the appearance which becomes its stature and intends to maintain his lawand-order onslaught until the 9m inhabitants knuckle under. Apart from imposing several

thousand spot fines on jaywalkers, beggars, illegal street traders, and litter droppers. Mamoun's constabulary has caught some quite remarkable malefactors. When 230 people are found guilty in one day of building without licences, it does suggest that Cairo has a fair way to go to become as law-abiding as, say, Copen-hagen or even Cardiff. But the intention is there: 180 Cairenes were fined last

126 high-spirited fellows had to pay up in one day just for whistling at passing girls.

Second thoughts

If the Royal African Society's information sheet is believed the Maharishi Mahesh Yogi is now dabbling in South-West Africa. The society's meeting on Thursday is listed as "Namibia: Meditation and Confrontation." High-pressure meditation teams have indeed been sent by his self-styled Holiness, the new master of Menimore, to Nicaragua to help President Samoza, to Iran, and even to Rhodesia—where 2,000 guerrillas are claimed to bave obediently downed arms.
Would the Maharishi be

going to Namibia in person, wondered. "All a frightful mistake," said a girl at the Northumberland society's Avenue office. "We meant mediation, not mediation."



"I beneve in initiative—old people need your's and mine" Lord Boothby

"Britain has often led the world with new ideas and new ways of tackling problems. Few people have a worse problem than our old folk. Medical science enables many of us to live longer, but it cannot give the answer to the suffering brought by loneliness, or being shut in a depressing room day after day, because there

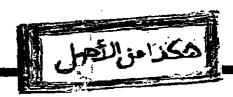
is nowhere to go. Help the Aged is working to solve this difficult human need with the imagination it used to pioneer flats for the elderly. With local volunteers it is helping to provide Day Centres where old people find companionship and friendly help. Similarly it is also moving forward to fund extra medical research into the

physical afflictions of old age."
Full details of Help the Aged's work will be sent with pleasure together with helpful information on minimising taxation (no Gift Tax is new levied on legacies to charity up to £100,000) Please write to: The Hon. Treasurer, the Rt. Hon. Lord Maybray-King, Help the Aged, Room FT7L, 32 Dover Street, London WIA ZAP.

≈£150perpetuates the memory of someone dece to you on the Dedication Plaque of a Day Centre,

FINANCIAL TIMES SURVEY

Monday January 8 1979



Diesel Engines

The world diesel engine industry is set for a period of rapid growth. With its well-established advantages of fuel economy and durability, the diesel engine is likely to displace other forms of power, particularly in countries such as the U.S. which are having to adjust to the new era of high energy prices.

The industry has big

potential for growth

By Geoffrey Owen

THE DIESEL engine represents engines for marine propulsion. one of the most attractive oppor- has been hit hard by the world-tunities for capital goods pro- wide slump in shipbuilding, ducers over the next decade in Manufacturers of this type of ducers over the next decade. In an era of high oil prices and prospective energy shortage the devoted much effort to selling diesel's well-established characteristics of fuel economy and generation; there is a good deal durability should enable it to of over capacity in this part of expand its share of existing the industry.

markets and to win new Another depressing factor has customers who have in the past relied on other forms of power, demand for diesel engines in particularly the period engine: the Middle Factor of the share of the period engine. durability should enable it to particularly the petrol engine.

The biggest area of potential growth is undoubtedly the U.S. where the shift from petrol to diesel is already under way, but 1974-75, bringing a sudden upthere are also opportunities for surge in business to manufac-new business in Europe and turers of diesel engines and of Japan, especially if the diesel- products incorporating diesel powered car gains in popularity engines, such as generating sets as much as some forecasters. As these countries became overbelieve. In the developing countries demand for diesel engines, both in electricity generation and in a variety of some suppliers have found other industrial applications, is themselves with large stocks to expected to grow rapidly, if dispose of The Middle East erratically, over the next few remains an important market

ent models, are competing for a a great deal in common between remains bright. Studies com-a tiny 3 hp engine used to power missioned by the Business a small irrigation pump and a Intelligence Program of SRI huge slow-speed diesel installed International, the U.S. based

engine have been forced to look for other markets and they have

the Middle East and some other oil-producing countries such as Nigeria. There was a remarkable boom in these markets in supplied or started running into financial problems, the tap has been suddenly turned off and for the medium and long term, but the growth will be less hectic than it was in the period Competition immediately following the oil immediately following the oil price increase of 1973;

More than 250 diesel engine customers, too, are likely to be manufacturers throughout the more discriminating in their world, making some 5,000 differ choice of suppliers.

Yet despite these difficulties market believed to be worth the overall outlook for the over \$15bn a year. There is not world diesel engine industry in a giant oil tanker; growth consulting and research organirates vary considerably from sation, suggest that demand out
one sector of the industry to side the Soviet bloc and China part of the industry which has
another. One sector, in particular will rise by an average of 8 per aroused the greatest excitement
lar, the manufacture of large cent a year between 1976 and in the past year or two; engine more widely in other sectors. It is st

between the different parts of the industry. The number of engines supplied to the farm to show much growth. There will; however, be a tendency for the average hp in farm tractors to rise and agriculture will remain an important outlet for the diesel engine producers. The most spectacular growth

is expected to occur in the automotive field, covering cars as well as trucks. Although there are great uncertainties about technical developments, government regulations and customer reaction, demand in the automotive sector is expected to rise by at least 10

1986. Unit sales will double makers and component suppliers and the diesel industry in the favourable to the diesel engine u.S. seems set for a period of and the value of sales will rise ments in new capacity and in rapid growth.

1986. Unit sales will double makers and component suppliers and the diesel industry in the favourable to the diesel engine u.S. regulations will be; in particular, there are fears that if the Federal Government sticks Within this global figure advantage of the there will be wide variations growth in demand.

The main focus of attention is the U.S. where in the lower horse power ranges — below machinery industry is unlikely about 300 hp-the diesel is much applications are almost a throwand tractors where ruggedness, diesel) accelerates due much as 15 per cent. It is this engines. But the need for development through liberalised part of the industry which has greater fuel economy is emission standards and fuel

Report

A research report published last year by Lehman Brothers Kuhn Loeb, one of the leading less firmly established than it is in Europe or Japan. The price of petrol has been and still is relatively low: small grow at a 12-15 per cent annual petrol engines are produced in rate over the next decade, comenormous volume and in some pared to a 4.7 per cent annual applications are almost a throw-rate during the preceding away product. Thus there has decade. "Incremental unit been little incentive for the use: growth," said the report "will of diesel engines except in such come in the automotive and light areas as long-distance trucks, and medium duty truck markets heavy construction equipment as engine substitution (gas to durability and fuel economy are increased public awareness of needed; rail traction and power the diesel's efficiency, higher generation are also important fuel prices and government markets in the U.S. for larger encouragement of diesel

to its proposed standard on nitrous oxide emissions, some manufacturers of diesel-powered cars will be faced with almost insuperable technical problems. Even if the standard is relaxed. some European observers believe that for many potential customers the balance of advantage between diesel and gasoline will not be clear cut (especially if the efficiency of the gasoline engine is improved) and that the swing to diesel will not be as dramatic as the forecasts quoted above suggest.

Nevertheless, even a modest acceleration in the growth rate should provide plenty of opportunities for European and Japanese engine manufacturers, since in the lower hp ranges they have bigger volumes, more experience and greater technical emission standards and fuel know-how than the domestic U.S. segments of the market may the ability to sell will countefficiency regulations."

The still unclear just how leading foreign companies are have used their huge domestic design and to manufacture.

Breakdown by Horse Power Category BASED ON Category SALES VALUE Breakdown by Application.

Trucks Buse 30-500hp 75% volume to build a strong position in the developing countries

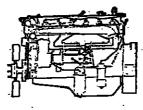
taking steps to strengthen their position in the U.S., either by take-owrs or by setting up their and increasingly in the U.S. own factories or by making supply arrangements American original equipment manufacturers (OEMs).

interesting competitive is taking shape, with manufacturers European lighter diesel engines attacking the U.S. market and the hig American manufacturers of the higher hp automotive engines, like Cummins, Detroit Diesel Allison (the General Motors subsidiary) and Caterpillar, seeking a larger share of the European market. Yet the strongest competitors in several

Europe is the home of the diesel engine and much of the know-how on which nations have built up industries, including Japan and developing countries such as European manufacturers. In large marine diesels, for instance, Japan, with its immensely successful shipbuilding industry. has been almost wholly depen dent on European licences. But Europe's traditional leadership in some of the fastest-growing parts of the market is under challenge. In the next few years the ability to sell will count at least as much as the ability to

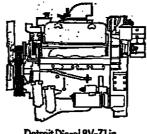
Bedford TM: one name that covers a range of eight tractor units. Each one is designed with the gross weight, payload capacity, power train and cab appropriate for specific kinds of operation.

So, at one end of the scale, there's the TM-2300, ideal for lowcostshort-haulwork. At the other, there's the powerful TM 4200, the autobahnshrinker. It can



Bedford 500 in TM 2300 and TM 2500 (151 bhp).

cover immense distances at speed. Each TM tractor is an integrated piece of design. Engine is matched to chassis. Gearbox to



TM 3800s and TM 4200s (297 bhp).

engine. Axle to gearbox. This means that each TM gives you optimum performance in terms of both power and cost efficiency.

All TMs are covered by Roadcall-it's the Bedford roundthe-clock breakdown recovery service. The chances are you'll never need it, but just in case...

BEDFORD

You see them here, the eight variations on the TM tractor. theme. All you have to do is to choose the one that's right for your operation. And with the TM range, that's easy.



















BEDFORD TM



mmins E290 now available as an option in TM 3800 (273 bhp).

New trends in a complex industry

BECAUSE IT covers such a the world shipbuilding industry dating and improving its engine broad horse power range, from the manufacturers have been designs—a process of evolution making strengons efforts to find rather than revolution, but still broad horse power range, from the manufacturers have been three hp to 50,000 hp, and such a variety of applications, the new markets, primarily variety of applications, the new markets, primarily structure of the diesel engine stationary engines for power industry is complex and difficult generation. The same is true to define. It is possible to of the medium-speed engines to define. It is possible to classify the main segments by It is possible to engine speed (Table I) or by horse power (Table II), but the boundaries between the segments are not clear-cut. medium-speed engine which belongs in the second category of Table I may compete in certain applications against a highspeed engine from the third

A further complication is that a company may have two entirely different ranges of engines within its portfolio. Thus Yanmar of Japan is probably the world's largest producer of small diesels for agricultural and other applications, but it also makes much larger engines of a different design for marine propulsion. Similarly MAN of Germany makes highspeed engines for trucks, but is also one of the major pro-ducers of very large slow-speed engines for marine propulsion. Within Hawker Siddeley there is not much in common between the small engines made by Petter and Lister and the larger units made by Mirrlees Black-

At the top end of the horsepower category there are the leading European proof slow-speed marine diesels, Sulzer of Switzerland, MAN of Germany and until the shipbuilding Burmeister and Wain of revives, perhaps in t Denmark. These engines were 1980s or possibly later? primarily designed for ship propulsion, but with the slump in company's ability to go on up-

THERE ARE three main cate-

1-Engines with a speed up

to 250 revolutions per minute

(rpm), weighing 20kg (44lb) per

horse power or more. These consist of low-speed two-stroke

crosshead engines with piston

diameter of about 1 metre (3.28

ft). They are produced in versions ranging from four to 12

cylinders and cover an output

span of about 6,000 hp to 48,000 hp.

2-Engines with a speed of

350-1,000 rpm, weighing between 5 and 15 kg (11-33 lb) per hp. There is a range from 2,000 to

30,000 hp in engines of 6-18

to be accommodated in tight variety

gories of diesel engines:

of the medium-speed engines improve the large engine's where Pielstick, MAN and a ability to burn low-quality fuel handful of other European manuoils. The manufacturers must facturers tend to dominate the world market, either through their own production or that of their licensees. Sulzer has 23 licensees in 16 countries making its slow-speed engines and 10 Since the marine engine industry licensees in eight countries is likely to suffer from overmedium-speed making its engines.

It is interesting that even that the number of competing Japan, despite its prowess in manufacturers and competing shipbuilding, has relied mainly on European know-how for its medium-speed and slow-speed marine engine production. panies or through withdrawals Engines designed by Sulzer, from the diesel engine business MAN, Burmeister and Wain, remains to be seen. Stork-Werkspoor of Holland. Pielstick of France. MaK of Germany and others are manuby a number of Japanese companies including IHI, Mitsubishi and Hitachi.

These medium- and slow-speed engines are produced in small volumes-few companies have an output of more than 100 engines a year—and a major uncertainty over the next few years is whether there will be enough orders to keep all the manufacturers, both licensors and licensees, in business, Will the companies now operating succeed in obtaining enough non-marine orders to keep going until the shipbuilding market revives, perhaps in the mid-

Much will depend on each

Specialised ships concerned with

offshore exploration also use

this type of engine, but because

of the depressed state of the

the industry's output is at pre-

cations, for power generation.

3-Engines with a speed range

industry, with an annual output

of around 5m units, compared

and second categories. Trucks,

tractors and construction equip-

ment are among the main appli-

cations, but engines of this type

are also used to power small

of other industrial

TABLE 1

Engine categories

cylinders. They are used in boats, in electricity generation, ships where a lot of power has in irrigation and in a great

space, such as ferries, passenger applications, ships and high-speed freighters. Source: Robert Bosch.

Threat

A further threat to the medium-speed engine producers is the move by the high-speed engine manufacturers into the higher hp ranges. It is possible that in certain applications a high-speed engine made by, say, Caterpillar — a company which has the cost advantage of a large internal market for its engines -will compete against a med-ium-speed diesel produced in much smaller quantities. There are, of course, great differences between the two engines in design and specifications: quite apart from the conservatism of diesel engine buyers and their reluctance to abandon a proven supplier, there may be compelling technical reasons for order-" premium-quality

requiring substantial expendi-ture; a particular area of atten-

tion at present is the need to

be able to generate enough funds to support their develop-

ment programmes and this in turn depends on maintaining

an adequate flow of new orders.

capacity for several years - to

designs is certain to diminish.

through mergers between com-

some observers believe

engine from a specialist sup-Nevertheless, the tendency for the high-volume engine manufacturers to look for customers outside their traditional fields is certain to grow. Below 500 hp, as Table II

shows, there are also a large number of manufacturers, especially in Europe. A distinction can be drawn—although, as usual in this industry, it is a shipbuilding industry about half blurred one-between specialist sent going into stationary appli- engine supply to original equipment manufacturers (OEMs) and equipment manufacturers who of over 1,000 rpm and weighing equipment manufacturers who 2-5 kg/hp (4.4-11 lb/hp). This make engines both for use in is the big volume sector of the their own machinery and for

ou<u>ts</u>ide sale. The largest of the "pure with a few thousand in the first engine suppliers is Cummins BL. Engine of the U.S. as an independent supplier; it its own vehicles. is the major producer of diesel engines for heavy trucks in the 500 hp category in Table II

produces engines for trucks growth 5,000-6,000 engines a year) but engine its products have an enviable diminish.
reputation for quality and Tradition

durability. can and does supply engines to Whether this will come about to Deutz in Germany; the parent

manufacturers Some trucks, tractors and construction equipment have developed their outside diesel engine sales as a substantial business in its own In the U.S. General Motors has its Detroit Diesel Allison subsidiary which supplies engines to GM's competitors as well as to GM itself. Caterpillar, the world's largest producer of earthmoving equipment, has in recent years been investing heavily in new diesel engine facilities to supply outside customers; Ford is its largest OEM customer in the U.S. and it is seeking to estab-U.S. and it is seeking to estab-lish a stronger hold on the reliance on outside engine European market. John Deere, the largest U.S. producer of form tractors, is also putting a great deal of effort behind its non-captive engine sales.

In the UK the largest producer of diesel engines after Perkins is Ford. It has a big captive market in its own vans and trucks, but is also a major supplier to outside customers, including makers of construction equipment, generating sets one—between specialist and a variety of other products.

manufacturers who Yet in its heaviest European-built trucks, for transcontinental operations, it relies on outside suppliers, princi-pally Cummins. This illustrates the well-established pattern of inter-trading between dieselmanufacturers/users. engine example (formerly This British Leyland) has one of the company has in the past broadest range of diesel engines considered the possibility of an of any vehicle manufacturer, association with a truck manu- and has an important nonfacturer (who would provide captive business, but it also the base load of orders), but offers engines made by Perkins has decided to stick to its role and other suppliers in some of

Inevitably a look at the 30-

U.S. and has a large manufacturing investment in the UK. prompts the question whether the market can accommodate all Another engine specialist is the suppliers now operating.

L. Gardner of the UK now part
of the Hawker Siddeley group.

It produces engines for the suppliers now operating.

Most people in the industry
believe that despite the expected
to the suppliers now operating. in demand for diesel engines there will be a tendency and other applications in engines there will be a tendency relatively small volume (about for the number of independent manufacturers

Traditionally, most of the European heavy truck manu-In practice, however, a com- facturers have made their own pany like Perkins, though owned engines. Some of them, of by Massey-Ferguson and derive course, do so on a very large ing a substantial volume of scale; their internal demand business from Massey-Ferguson gives them a solid base on which tractors and other equipment, to develop their outside engine tractors and other equipment, to develop their outside engine regards itself primarily as an sales. Daimler-Benz clearly falls independent engine supplier; it into this category, as does Fiat. into this category, as does Fiat. But as the trend towards larger the parent company's direct engines continues and as the competitors. The same applies necessary effort in design and necessary effort in design and development becomes more company, Kloeckner-Humboldt costly (both to improve engine Deutz, makes tractors and farm machinery which use Deutz and other regulations), it is engines, but the engine side is possible that some of the smaller managed as an independent truck manufacturers may decide business.

construction

power generation,

ship propulsion

equipment.

Over 5,000hp

Ship propulsion

power generation

outside engine suppliers.
Companies like Cummins
argue that they have the volume to support the investment in new engine development and that the truck manufacturers, unless they are operating on a very large scale, cannot afford to duplicate it. For a truck manufacturer to withdraw totally from engine production is a difficult decision, with social and employment implicationsquite apart from the blow to prestige. But it seems likely that the smaller truck makers, as they prepare for investment in a major new model programme.

Caution

Forecasts of rapid and far-reaching rationalisation in the diesel engine industry need to be treated with caution. Operators of trucks, construction equipment, fishing boats or even power stations, once they become convinced that a particular engine is totally reliable and suits their requiresatisfactorily. extremely reluctant to switch to another supplier. (By the same token, if an engine breaks down in service, the supplier will find it virtually impossible to re-establish his reputation with that particular set of customers.)

Hence a company which pro-duces high quality engines and enjoys the confidence of his customers can maintain profitable and successful business even though his volume of output may be small. Engineering a new engine into a truck and proving it in service may take four years or more and at the end of it the new engine may be offered standard. Market shares in this industry do not change as

At the hottom end of the hp range the competition is no less fierce, with the Japanese moving strongly shead in recent years. Japan probably accounts for not far short of half of all diesel engines produced in the 0-30 hp range. The biggest manufacturers are Yanmar and Kubota.

STRUCTURE OF THE INDUSTRY TABLE II

The table lists some of the main European, Japanese and American manufacturers in each category. Manufacturers who are primarily licensees are not included. WESTERN EUROPE JAPAN Size and main applications FRANCE ITALY Yanmar Onan² Lombardini

Teledyne Pumps, small generators, small agricultural and Kubota GERMANY Mitsubishî Wisconsin. Ducati industrial equipment, Petters¹ Farymann Dentz³ IHI Lister GERMANY Detroit Diesel FRANCE Isozu Mitsubishi Daimler-Benz Peugeot/Citroen Cummins 30-500hp Trucks, buses, cars tractors, farm Volkswagen Toyota Deutz3 Baudonin⁵ Int. Harvester machinery,

Nissan Wankesha⁸ MWN13 ITALY Toyo Kogyo Daihatsu Teledyne Continental VM Komatsu Allis-Chalmers UK Same Perkins⁷ Perkins⁷ SWEDEN Ford ... Levland Volvo Saab-Scania Cummins Cardner? HOLLAND Rolls-Rovce Motors -----Bedford4 Lister! Kelvin⁵

Daihatsu

Niigata Fuji

Yanmar

Akasaka

Mitsubishi

FRANCE

SEMT-Pielstick GERMANY 500-5.000hp MTU MWM13 ITALY Ship propulsion, power generation, rail traction, Grandi Moteri MAK' Deutz3 UK **SWEDEN** Rustons Paxman⁵

NORWAY Mirrlees Blackstone¹ Bergen APE-Allen⁸ FINLAND Cummins Rolls-Royce Wartsila Motors HOLLAND

SWITZERLAND Stork-Werkspoor

SWITZERLAND Mitsubishi Delaval Doxford 12 Sulzer Mitsui Fairbanks Mirriees DENMARK Blackstone¹ Burmeister and HOLLAND Wain GERMANY Stork-Werkspoor MAN MAR¹⁴ ITALY Deutz³ Grandi Motori Trieste FRANCE SEMT-Pielstick9 BELGIUM

Notes: The numbered notes refer to the parent company

Hawker Siddeley 37 per cent owned by Hawker Siddeley Kloeckner-Humboldt-Deutz General Motors GEC

Amalgamated Power Engineering Alsthom-Atlantique Colt Industries

British Shipbuilders Knorr-Bremse KG Dresser Industries Massey-Ferguson Fried. Krupp GmbH

both of whom have a substantial this hp range sinclude the compete strongly in all the main and construction equipment. India, as well as the established Many of these engines are not British and German producers. suitable for sale to OEMs in Europe and the U.S., where the requirement is for a more rugged engine, but they have a big sale in the developing countries, especially in the Far East where agricultural condi-tions are similar to those of

Japan. Other strong contenders in

Throughout all the segments of the industry competition is becoming increasingly international. As in other branches of engineering, there may be a tendency for the industry to polarise between the small specialists, serving a limited market, and the large-scale producers who see the need

barriers between the different sectors of the industry are likely to become even more blurred. diesel engine manufacturer, in relation to design, manufacture and marketing, is likely to be-come even more difficult in the

Electro-Motive

Cummins

Delaval ...

Fairhanks

Morse¹¹

General Electric

Caternillar

Division of GM4

By Geoffrey Owen



Far from just getting off the ground, the new Golf 1500cc. diesel engine is a roaring success. In fact, it's proved to be the most modern,

efficient, economical and quiet engine of its type. (As quiet as the petrol version you'll find in the equally successful Volkswagen Golf saloon.)

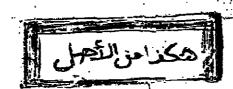
And like all Volkswagen's industrial diesel engines. its uses are wide ranging. You'll get the same

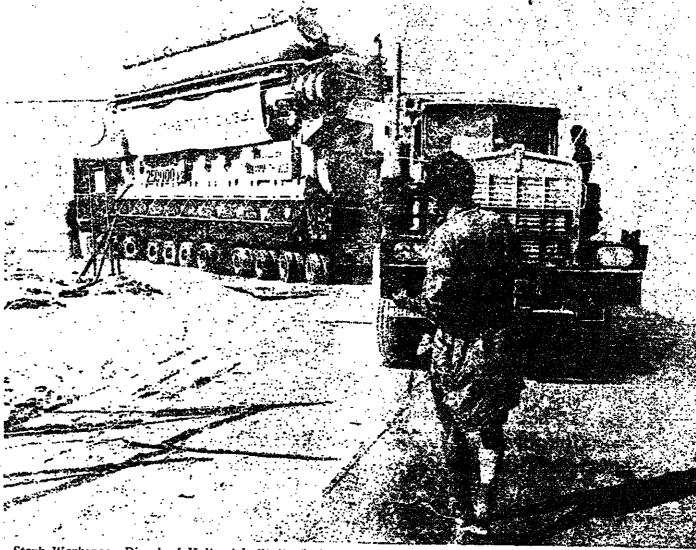
superlative performance whether it's planted firmly on the ground in-compressors and generators or flying high in an air ship.

The full range of water and air-cooled engines is available in the UK exclusively from MIAC.

Find out more about the current range of engines by posting the coupon. (And keep a look-out for the new six cylinder diesel engine, available soon.)

Please send me your industrial engines.	technical brochure about Volkswagen
Name	Fosition
Сотрапу	
Address	
	Te! No





Stork Werkspoor Diesel of Holland built its first marine diesel engine in 1908 and is one of the leading Stork Werkspoor Diesel of Holland built its first marine diesel engine in 1908 and is one of the leading producers of medium-speed engines for marine and industrial applications; the range consists of the TM410 and the TM620 with outputs from 4,000 to 22,000 ohp per engine. The company also produces a range of smaller engines with outputs ranging from 500 to 1,800 blp per engine. Like other medium-speed engine builders, Stork Werkspoor has been seeking to develop new markets in power generation. A total of 12 TM620 engines, six in each of two power stations, are currently in operation. One of these is in Saudi Arabia and the other in the Emirate of Ras-Al-Khaimah. The picture shows the first TM620 diesel engine being transported to the Ras-Al-Khaimah power station. The first V-form TM620, a 12-cylinder engine is now being assembled in the Amsterdam factory: the company believes there is "interesting potential" for this engine in 100-200MW power stations

THE FINAL DIESEL FACT:

More people choose Peugeot than any other:

The figures speak for themselves. When purchasing a diesel powered car more people choose Peugeot than any other Fact!

Why is this? Firstly, we offer a comprehensive range of Saloons and Estates. Cars that are suitable for family and business motoring needs.

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A Pergeot diesel engine is strong, reliable and, above all, very economical. Peugeot have combined the benefits of diesel to the qualities of the luxury car. The 504 range of diesel

cars is quiet, comfortable and so easy to drive, making them superb for the high mileage motorist who wishes to cover long distances economically and in total comfort.

There's Peugeot Finance with extended credit or leasing facilities* to make owning a 504 Diesel so easy. A twelve month unlimited mileage guarantee covers every car and with over 230 dealers throughout the British Isles, you have the reassurance that servicing will present you with no problems.

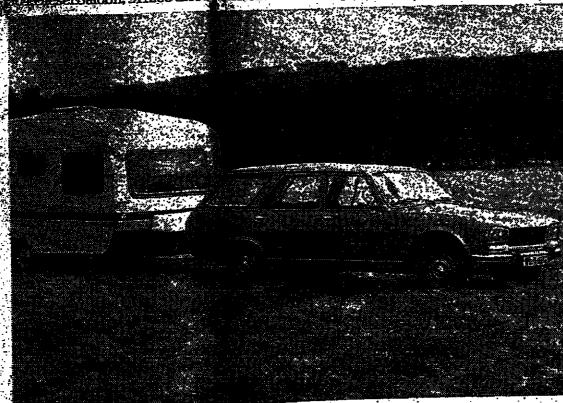
Test drive a 504 Diesel and discover for yourself the many advantages of Peugeot Diesel motoring.



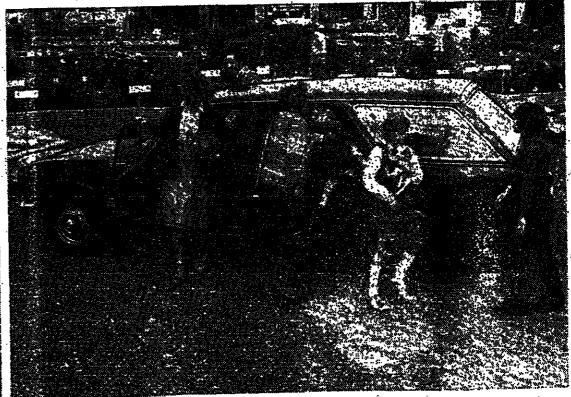
out the set Salcon, 2112cc diesel Persion of the newly-introduced 504 1800 Salcon.



504 GLD, a truly luxurious car powered by a 2304cc engine.



504 Diesel Estate with a 2112cc engine makes an ideal working car.



504 Family Estate Diesel, 2304cc with three rows of forward-facing seats for carrying up to eight people.

Peugeot 504 Diesel Range

Peugeot Automobiles U.K.Ltd., 333 Western Avenue, London W3 0RS. Tel: 01-993 2331



While the builders of large marine engines are

suffering from the world slump in shipbuilding, there are hopes of spectacular growth in the demand for diesel-powered cars. On this, and the following two pages, the prospects forthe diesel engine in automotive and marine applications are assessed.

boom in car sector is forecast

THE PASSENGER car diesel in Europe of 482,500 diesel cars engine sector is the cause of will double by 1985. most current excitement.

powered by the major changes taking place in the U.S. market and the commitment of America's biggest manufacturer General Motors to a dieselization policy for up to enathird of the 5.5m or so cars it produces every

available in Durage, Now every major European menufacturer has introduced, or is working hard to introduce, a diesel car current levels the 1977 output lengine in a Granada.

Authoritative fereeasts are for new cars do the kind of mileage from a fairly low base—up to sales could go on growing diesel-engined version but sales 1985.

The car diesel beam will be the proposition of the diesel of many customers are not willing that the proposition by the diesel is many customers are not willing reached. There is another factor, however. If diesel cars became "fashionable" in some way that would give demand a further big boost.

There are already signs of this "pull" in demand from the motorists in West Germany. But for different reasons the where diesel cars account for European makers will not be about 5 per cent of the market far behind in evening public with 1977 sales of 121,300. awareness and demand for Already half of Mercedes' car discolorationed cars. Two years output is dissel-nowered and can only foun dissel ny has were both General Motors, via its Opel subsidiary, and Ford have entered the market-Ford perhaps a little reluctantly by offer-French made Pengeot diesel

I Latest of the German entrants and because in French comhas been Volkeswagen with a panies cars are not handed out
of the cent of those who buy
has been embarrassingly suclooper cent of those who buy
has been embarrassingly suclooper cent of the German entrants and because in French comwith the remainder lost in the
cooling water. exhaust and internal friction. At part-load
looper cent of the German entrants and because in French comwith the remainder lost in the
cooling water. exhaust and internal friction. At part-load
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cooling water. exhaust and internal friction. At part-load
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looper cent of the German entrants and because in French comwith the remainder lost in the
cooling water. exhaust and internal friction. At part-load
looper cent of the Golf. This as "perks" to salesmen.

Salesmen are paid a basic sum
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Salesmen are paid a basic sum
ternal friction. At part-load
looper cent of the Golf. This as "perks" to salesmen. 10 per cent of those who buy has been embarrassingly successful and VW just cannot keep Western world demand to in-crease at an average of nearly the purchase of a diesel car a in four orders for a new Golf 25 per cent a year-admittedly viable proposition. So in theory in West Germany is for the

> In France long-established diesel car maker Peugeot has been joined by Citroen with a version of its CX saloon, a way even before the two merged. The latest recruit to the Peugeot fold. Chrysler Europe, makes a diesel car in

It is France which leads the 6.5 per cent of the total new car market. Some 122,300 diesel cars were sold there in 1977. ars were sold there in 1977. For the petrol engine is a This seems to be because the highly inefficient power unit. At

towards their travelling expenses and are expected to provide both the care and the fuel to power it from that amount.

This points us immediately to the underlying reason for the worldwide surge of interest in the diesel car-diesel engines offer much better fuel economy than equivalent petrol engines. Opinion varies on how much, but even the most conservative development which was on the engineers agree on at least 25 per cent overall improvement in fuel consumption.

efficiency advantage under partload conditions, meaning that stop-start urban motoring with way in Europe with diesel cars a diesel car returns consumption because they account for about figures up to 50 per cent better engined car.

efficiency is about 8 per cent.

Official tests in the U.S. showed that the VW Golf, known there as the Rabbit, when powered by a 1.5 litre petrol engine in urban conditions averaged 25 miles per U.S. gallon. With a 1.6 litre diesel engine the Rabbit achieved 40 mpg—a 60 per cent improvement. In highway conditions the figures were 38 mpg, 53-mpg or a 39 per cent improvement.

At the heavier end of the marer cent overall improvement ket, the comparisons between a fuel consumption.

The diesel shows its greatest cedes 280E with a 2.8 litre petrol freignest advantage winds. engine and a 300D with a 3 litre diesel were equally revealing. There was a 57 per cent im-

provement between petrol and diesel in urban motoring (from 14 mpg to 22 mpg) and a 47 per petrol. cent benefit in highway conditions (from 19 mpg to 28 mpg).

This seems to be because the bighly inefficient power unit. At cost of both types of frel—pared in the period age motoring) it yields about 30 all over the world since the differential between the two

quadrupling of the price of crude oil after the 1973 Middle East war. Some countries tried to hold down petrol consump-tion while at the same time limiting damage to industrial users by widening the difference in price between petrol and In Brazil, Italy, diesel oil. Mexico, Spain Sweden diesel is less than half the price of petrol. Only in

effectively makes diesel cars unobtainable — thus preventing private motorists from enjoying the benefit of cheaper fuel specification. All this meant to stimulate industrial reflected in the price.

It is no wonder then that the latest addition to the diesel cars on offer comes from Fiat of Italy where the price of DERV is less than one-third of that of

However, it is in countries where fuel prices are high that

types of fuel need not be great approach is that it gives engines before diesel shows savings performance characteristics through its superior fuel eco- which will make them suitable nomy.

among the major producers of and marine applications — but diesel cars even though the that is not much of a penalty prices of petrol and DERV are as far as the big motor makers about the same.

In fact, there would be absoand lutely no contest between petrol recent events in this connection half and diesel cars but for the fact was when Perkins, still the that diesel engines must cost Brazil did the Government also more, They use complicated fuel in the world, stopped an £8m introduce legislation which injection equipment, need an investment programme aimed uprated battery and starter at developing a small diesel for

To make economic sense the breakeven point between the additional cost of the diesel engine and savings on fuel costs should take place while the first owner is still driving his diesel car. He has to recover the extra investment early enough to go on and gain the real benefit from lower running costs. It would not make sense for the UK motorist, for example, to pay an extra £500 for a diesel version of the car he wants, cover only 10,000 miles a year at to-day's fuel prices and then

sell the car after two years. But the manufacturers themselves can either hold back or stimulate demand for diesel engined cars by their marketing policies. The add-on cost for various diesel cars is far from consistent throughout the world. Who can blame VW, for example, for adding 15 per cent to the price of the diesel Golf, where it has no hope of matching demand? In Britain Peugeot adds 15 per cent to the normal cost for a diesel version of the 504GL but in France the differential is 20 per cent.

Cost

In future the real extra cost of diesel engines will continue Italy, the Sofim plant is making to fall because economies of a small diesel engine for car, scale can be achieved if the commercial vehicle and indiesel cars can run along the dustrial uses. So they are by same assembly lines as the no means lightweight. The 2.5 petrol versions. This already litre Sofim diesel in the 131 happens with VW in West Gerweighs 170 lb more than the many and Oldsmobile in the usual power unit, a 1.6 litre

This introduces another im-portant factor about diesel will clear the tall diesel engine. engines for cars. Many people almost the same basic com-ponents for both petrol and diesel units he Hexibility of manocurre essencar assembly.

More important, iperhaps, nobody yet is willing to guess how far dieselisation of cars will go. Will it fade fast in a few years? Will there be a boom beyond the most optimistic expectations? Either way a volume producer using the

caught wrong footed.

Thus West Germany is only for car, light commercial are concerned.

One of the most significant largest builder of diesel engines motor, and may involve detail cars and light vans. The group changes to a car's technical took this action after the diesel specification. All this has to be Golf appeared successfully reflected in the price.

To make economic sense the petrol engine.

Expertise

Leyland Vehicles has a long history of diesel engine expertise (the Daf, Scania, Volvo, Mack and Pegaso diesels can all trace their origins back to Levland designs) is preparing a dieselised version of the I series petrol engine to take i into the diesel car market and will offer a 1.8 litre diesel Princess by the middle of 1979. In the longer-term dieselised

O series engines and others will be used to power BL vehicles.
Chrysler in Spain has had some success with 160 and 180 cars equipped with diesel engines from its Barreiros truck subsidiary but is working to convert existing petrol

engines to diesel operation. The odd manufacturer out in Europe at the omment is Fiat. The Fiat 131 and 132 cars are or soon will be—available with a diesel engine produced by a new company, Sofim, set up in 1974 by Fiat, Alfa Romeo (the State-owned Italian concern) and Renault (the State-owned French group).

At Foggia in the south of petrol engine. Fiat have put a

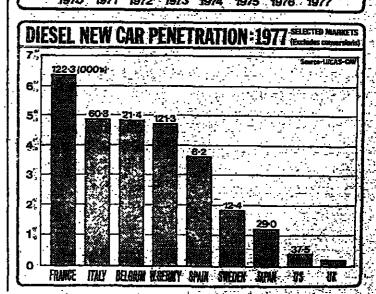
The Sofim plant needs to in the motor industry believe reach an output of 1,000 engines that such diesels will be a day to become profitable. But derived almost universally from diesel versions of the new Fiat petrol engines. The cylinder Ritmo are likely to appear in head is the only major special 1979 powered not by the Soum component in a diesel engine unit but by a dieselised petrol cylinder block. And in spite of its investment, Renault's diesel has the versions of the R20 and R30 tial for volume production. He of the 2 litre petrol engine made gets economies of scale in at the jointly-owned Pengeot-production of the engine and Renault-Volvo plant at Douvrin.

in northern France. when it launched the 131 diesel recently Flat pointed out that sales of diesel cars in Europe have doubled since the oil crisis (they were 180,000 in 1974) and predicted they would interest at the control of the cont increase at about 11 per cent a year for another four or five

same basic power unit, either General Motors president petrol or diesel, will not be E. M. Estes, has given his own nught wrong footed.

prediction about the U.S. He
The major drawback to this said that at least 25 to 30 per CONTINUED ON NEXT PAGE

GROWTH OF DIESEL CARS 30,000 THOUSAND UNITS Petrol-engined cars Diesel-engined cars



Specify where there's space for an engine.

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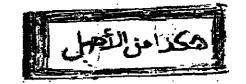
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Truck makers use the major share

THE MOST extensive use of diesel engines for commercial diesel engines is to power com- rehicles. A substantial propormercial vehicles. Commercial tion of its output of 30 to 500 vehicle engines account for hp engines in 1976-totalling nearly half the diesel industry's 510,000 must have gone to total turnover. In 1976 some power its own trucks, buses and 1.53m diesel-engined commercials cial vehicles were built in the ... Compared with this Perkins, stroke Detroit Diesel. Western world and the engines: the world's major diesel engine themselves had a value of £2.4bn. producer seems to have sup-

Authoritative forecasts suggest that demand for commergest that demand for commer output to cial vehicle diesels in the West vehicle make will advance at around 9 per case of the stage around 3 m a year would 500 hp type be required 100 for percent a year industrial conger cas diesel engines—which own fractor are predicted to grow at around 190,000, and 25 per cent a year over the 100,000, are period—the share of the total producers. diesel market in volume terms held by commercial vehicle engines will remain constant at

s that it gives one or make them to a policieus of a particular than the first th

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around 41 per cent.

In Europe, except for the that is they specify that an UK, the lendency is for the engine from one of the independent own diesel engines. Fiat, The list of independents is Berlief (part of Renault). Daim ler-Benz, MAN, Daf, Volvo and Scania, for example, all make Siddeley subsidiary, as well as their own diesel power units, the American-owned but U.K. The only notable exception in manufacturing, Cummins and Continental Europe seems to be Perkins.
Saviem (now also part of Thus in the UK Leyland

producer seems to have supplied about 154,000 of its 550,000 output to the commercial

Also in Europe Ford, with 240,000 engines of the 30 to 220,000 engines of the 30 to among them such concerns as 500 hp type produced in 1976 ERF, Foden and, once upon a (but with substantial sales to industrial customers and to its industrial customers and to its fairly recently was absorbed into the International Harvester 190,000, are among the major Some people in the truck

In the UK the American system persists in that some customers really buy a diesel

Royce and Gardner, the Hawker

Continental Europe seems to Savient (now also part of Thus in the Unique Renault of France) which uses Vehicles offer, if required, a Rolls or Cummins engine in a cause this is a sector where Boxer or Mastiff truck or a Rolls they are difficult to find. But in the Routeman. Ford fits the Daimler Benz is almost certainly large Transcontinental with a the major manufacturer of Cummins engine.

DIESEL SHARE OF VEHICLE PRODUCTION SASSES

- WOEREANY

The current exception to the general rule about the independents becoming less important in the truck engine business is Dorman, an offshoot of GEC of the UK, which is making strong attempts to break into the business and is selling to ERF.

There are other problems hauliers must face and they expect the engine makers to deal with. As regulations on noise levels inside and outside the cab are tightened up so must some attention be given to the fact that bigger engines can make more of a racket. Restrictions on the emissions that an engine can put into the atmosphere are becoming more stringent and only the engine manufacturers can tackle this problem.

and emission control could have

Working towards a quieter, cleaner world

Cummins as well as its own two-

The existence of independent customers has enabled a similar more stringent noise and emis- Mitsubishi makers to thrive in the UKamong them such concerns as ERF, Foden and, once upon a

some people in the truck industry suggest that the independent diesel engine makers will gradually be squeezed out of the commercial vehicle business, possibly because it will cost so much to produce an engine which can meet the various legal requirements—on such things as noise and emissions. But the independents use precisely the same argument to prove to the truck makers that they should leave diesel engines to the specialist.

There are other influences. too. For example, it came as no surprise to find that the latest in the range of trucks from Seddon Atkinson is powered by an International Harvester-made diesel rather than a Gardner like

But trends are only trends and there can be exceptions.

Another trend for which there are few exceptions is the one which has seen hauliers asking for comparatively more horse-power under the bonnet. For example, not many trucks now stick at the UK legal minimum which is that there should be at least 6hp per ton.

In days gone by both noise

their running costs as fuel is Isuzu 190,000

Europe.
A 32-ton truck of today power of ten years ago. The Rolls-Royce "Eagle" range, Cummins. and Levland Methods. roup of the U.S. Cummins, and Leyland Vehicles
Some people in the truck are among the UK makers offering a 12-litre diesel power unit while Cummins has a 14-litre engine for heavy trucks.

Power -

The demand for more power is felt in the medium part of the commercial vehicle market as well. Ford says that, although it offers a variety of engines for its 16-tonner, the "take" of higher (170 hp) engines has "increased noticeably." And where Ford offers either a four or six-cylinder engine on the same model of truck there is more demand for

the six-cylinder type. There is a similar pattern in the rest of Europe because. bigger engines can more easily cope with the faster speeds and the more intensive use trucks have to withstand today. A big truck has to earn £400 a week to pay its keep so it must be kept working as hard as possible.

New diesel engines to cope with these problems will almost certainly be developed from the existing types. The diesel engine has not changed very much in the past 25 years after cent of his company's cars will be powered by diesel engines in the past 25 years after cent of his company's cars will be powered by diesel engines in has been working on the theory has been working on the theory system which Ford has designed. In the U.S., however, the use same time. This is proving with these problems will almost

engine which helps keep down both noise and emissions.

more on turbo-charging develop- today's average of 18 mpg. ments than any other European

petitors are offering turbo- car," charged engines in pursuit of

Dodge, the Chrysler offshoot, been tackled fairly easily but Diesel engine production in uses Perkins and Mercedes this inevitably would have led to 30hp to 500hp range*

getting increasingly expensive. General Motors 191,000 In any case, it cannot be many Fiat 190,000 breed of independent truck sion control standards in International Harvester 140,000 KHD 110,000 Commits

> † Approximate totals. ‡ Includes Austin-Morris and Land-Rover.

truck and commercial vehicle fleets. It is a fact of life that the higher the cost of fuel. the more attractive diesel engines become.

Of course, at the heavy end of the truck business everywhere, including the States, diesel engines are almost universally used because fuel consumption is so great and the big trucks in a year.

But now dieselisation is growing fast in the mid-range be sending built-up trucks to the vehicles in the U.S., what the U.S., a different approach will Americans call the Class 6 be employed by M.A.N. of Gertrucks weighing between 9 tons many (Maschinenfabrik-Ausand 11.8 tons. In 1977 only 8 burg-Nuremberg) which has per cent of the trucks sold in acquired 12.6 per cent of White this category were dieselpowered, involving 11,000 out of them they will develop a new some 136,000 units. But growth middle-weight diesel truck. from now on is expected to be M.A.N. hopes to be able to in-

diesel trucks will take 15 per cent of the Class 6 market by 1980, 23 per cent by 1982 and 35

units.
The European truck makers them are already well into pro-jects aimed at gaining some-

the States. Signal Companies conglomerate, for Class 6 trucks built in France to be sold bearing a

Mack badge.

Volvo is linked with the Freightliner Corporation, a subsidiary of Consolidated Freightways, to cover marketing in the U.S. and Canada of trucks built in Sweden.

Iveco, the joint concern 80 per cent owned by Fiat of Italy and 20 per cent by Kloeckner-Humboldt-Deutz of Germany, is many are the miles covered by setting up its own distribution network in the States.

While these Europeans will Trucks of America. Between

vehicles. And the engine manufac 41 per cent of all diesel engined turers themselves, notably trucks in the States. Caterpillar, and offshoot, are developing new in the world today, products to meet the growing In the Soviet Union at world terms already. In 1976 Caterpillar produced 90,000

does International Harvester and Fiat technology has been (1976 output of 30 to 500 hp used at the purpose-built plant engines: 140,000) along with which will be providing engines

Detroit Diesel.

production in 1980 of up to 75,000 units a year of a new 8.2

corporate some European com- litre diesel engine specifically uses Perkins and Mercedes (Daimler-Benz) diesels at the heavy end of its range while General Motors' Bedford truck.

General Motors' Bedford truck- making subsidiary can offer the medium-duty market.

Daimler-Benz (Daimler-Benz) diesels at the heavy end of its range while the motors' Bedford truck- motors' Bedford truck developed as part of a joint that diesels are the answer to venture with Volkswagen could many of the legislative probbe competitive in the U.S. as lems the automotive industry per cent by 1985 or about 70,000 long as the dollar's value does faces in the States. The group out of a total market of 200,000 not slip too far. has said that by 1985 more units.

The indigenous American than 30 per cent of its light has said that by 1985 more

The European truck makers diesel engine producers will not commercial vehicles will be hope to gain something from let the new opportunities go undiesel engine powered. this trend and a handful of contested to the Europeans, of Recent events have also per-them are already well into pro- course. The major producers in suaded Cummins to re-enter the U.S. of Class 6 trucks, the medium-duty market with a thing more than a foothold in Ford, General Motors and Inter-derivative of one of its heavy national Harvester, are all tak- duty engines. This is being Renault has lined up a deal ing steps to improve their offered with a range of 1979 with Mack Trucks, part of the position in diesel-powered Ford trucks. Currently Cummins engines power more than

> Finally a word about what is General Motors through its almost certainly the most-Detroit Diesel Allison engine ambitious diesel engine project

> demand. They are, of course. Naberezhnyje Chelny, near the major producers in Western geographical centre of the geographical centre of the country, the Kama River project involves an amalgamation of diesel engines in the 30 to 500 seven plants which the Russians hp range, Cummins 120,000 and say will be capable of producing General Motors 191,000. The 150,000 trucks a year and also group recently sold its millionth 220,000 diesel engines.

> The current aim is for this In the Class 6 truck range, scale of production to be Ford uses a Caterpillar diesel as reached by 1982. Daimler-Benz some of its own.
>
> GM's Detroit Diesel is building a new plant designed to start
>
> mainly for vehicles to be built in the Soviet Union and other Comecon countries.

> > Kenneth Gooding

Car sector continued from previous page

charging. This gives efficient, facturers have been told by large cars in its range, controlled combustion in the told combustion in the first agency of the controlled combustion in the controlled combustion in the first agency of the controlled combustion in the controlled combusti

GM feels that the diesel option claims that it will use around group and since as long ago as 1968 has been using turbo-charged engines in volume in its truck range.

Now most of Leyland's competitors are offering turbo-car, 'Mr. Estes exclaimed.

The design has recently moved out of the theoretical stage of development to the product carms that it will use around claims that it will use around 20 per cent less fuel than a 20 per cent less fuel than a

fuel economy.

In the U.S. the low cost of fuel
Basically. Ford believes that commercial production. But it well.

has held back dieselisation of currently the disadvantages of will be more expensive than the

Washington to push up average
fuel consumption across their stratified charge engine which model ranges to 28.5 U.S. mpg enables a "leaner" petrol mixexpensive.

The product range from the used (or one that is the used for one the used for one that is the used for one that it is the used for one that it is the used for one that it is the used f It has designed its own Leyland reckons it has spent by 1985 by gradual stages from ture to be used (or one that is not so highly concentrated), and

car, Mr. Estes exclaimed. development to the product than petrol engines; they regulation will be waived when However, GM's main rival, development stage. It should be require weight additions to the rest of the clean air legislation, is taking a different view. ready by the mid-1980s for other parts of the vehicle as tion comes into effect.

diesel engine has characteristics which many drivers will not say that there is no possibility tolerate. And in the U.S. in particular, the use of the diesel 1.0 NOx (1 gramme of nitrous does not help the de-weighting oxide a mile) which becomes process which is going on. Not effective in 1981. But it is also only are diesel engines heavier widely believed that the NOx

Perhaps more important in

At Leyland Vehicles there is 1985.

At Leyland Vehicle there is 1985.

At Le part of the catalyst which con- engine does not solve the trols emissions to be dispensed problem completely because nitrous oxide emission (NOx) is difficult to design out of

Many people in the industry that diesel engines can meet the

Kenneth Gooding

The 80's could be a quiet time for diesel engine users

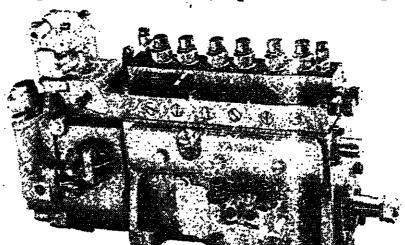
All over the world, diesel engine noise and pollution legislation is tougher than ever before. And even more stringent regulations are forecast for the nineteen eighties.

To meet these predicted controls - and to assist dieselengine manufacturers in answering customer demand for higher specific power-Lucas CAV has been developing new fuelinjection systems. The work covers rotary and inline pumps, injectors and fuel filtration units. For cars, trucks, tractors and everything else that diesel engines are used for today.

Take the Maximec, for example. It is the latest CAV inline fuel injection pump, capable of fuelling engines of up to 100 bhp per cylinder.

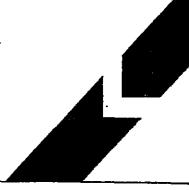
The higher injection rates and shorter injection periods it allows make a significant contribution towards reduced exhaust emissions.

Equally important, the Maximec's robust design features have led to a marked reduction in noise levels. It is some 5-8 decibels quieter than competitive pumps of comparable performance. Which puts it well within the estimated requirements of noise legislation right



into the 1980's. Quiet times ahead for diesel engine manufacturers? The Maximec, and many other developments like it in the CAV product range, turn what could be a threat into a promise of continuing business success.

Lucas CAV Lucas CAV Limited, London W37SS



Key questions in the marine sector

TWO QUESTIONS dominate the marine diesel engine indus-try today: the short-term prob-lem of the shipbuilding recession—which is not expected to bottom out until 1981—and the longer-term uncertainty of the supply, price and quality of fuel oils.

So far as the recession goes, all the engine builders have now had four years to plan for what are certain to be two to three very lean years indeed. As all the major European manufacturers have extensive non-marine engineering in-terests, they have followed the obvious course of switching resources to these areas.

For some of the smaller companies and the shipyard licensees it is far less easy to diversify and a trail of redundancies in engine-building shops is certain to follow more widely publicised and contro-versial job losses in shipbuild-

The impact of the recession has, of course, been much more complex than this. It has stopped dead in its tracks the shipping industry's pre-1973 interest in ever-larger oil tankers and ever-faster con-Sulzer (Switzerland) B & W (Denmark) tainer ships, and has thereby M.A.N. (W. Germany) switched the engine designer's Mitsublshi (Japan)
prime focus away from the G.M.T. (Italy)
remorseless search for higher Doxford (UK) specific output per cylinder to (in rough order of priority), fuel economy, reduced maintenance, ability to burn lowquality fuels, extended auto-

to be in greatest demand in the next few years—that is smaller this type.

At the heavier end, new on to the

dramatic innovation, although market in preparation for better there is a steady supply of dramatic claims about the fuel a newcomer, the RLA 90, and conservation capabilities of on a rather different tack. GRYTH on a rather different tack.

fast passenger liner or conindustry expect a snarp increase
in this share to 30 per cent or
whole family of designs
for the six low-speed enginer.

Perhaps the position is best
ouilders (Sulzer of Switzerland.

Tomethe six low-speed enginer or conindustry expect a snarp increase
in this share to 30 per cent or
35 per cent by 1985 because of
the relatively larger demand for
smaller ships, the fuel and
whom seven years of assiduous
research and development can
be summed up in the claimed

fast passenger liner or conindustry expect a snarp increase
tions, the ost dramatic of
speed licence agreement with
Sulzer, and Colt has a longeroil residue entirely unacceptsmaller ships, the fuel and
able in an internal combustion
maintenance questions are
engine—and difficult, if not
have also been provided by the
working against medium speed

working against medium speed

speed licence agreement with
starter of the fluid
sulzer, and Colt has a longeroil residue entirely unacceptsmaller ships, the fuel and
oil residue entirely unacceptsmaller ships, the fuel in this share to 30 per cent or
the first part of the fluid
to provide the flu

MERCHANT SHIP MAIN ENGINES COMPLETED IN 1977

(Vessels over 2.000 dwt).

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
MEDIUM AND HIGH SPEED				
		of which		
	of	built by		sbare
designer/manufacturer	engines	licenseé	(000)	%
Pielstick (France)	112	91	740	29.8
MLA.N. (W. Germany)	- 71	. 38 .	- 608 .	<u> 34.2</u>
Mak (W. Germany)	59	 :	216	8.6
Deutz (W. Germany)	43	15	152	6.1
B & W (Denmark)	43	4	117	4.7
Sulzer (Switzerland)	. 25	21	101	4
Mitsubishi (Japan)	21	19	96	3.8
Stork Werkspoor (Holland)	13		90	3.6
GMT (Italy)	16	4 2	- 70	2.8
MWM (W. Germany)	20	_	57	2,2
Hanshin (Japan)	12	_	41	1.6
Nohab Polar (Sweden)	13	2	34	1.4
Normo (Norway)	10	_	28	1.1
Daihatsu (Japan)	16		27	1.1
Others	66	3	126	5.1
Totals	540	199	2,513	100
GAS TURBINES		_		
Pratt and Whitney (U.S.)	5	_	134	71.8
General Electric (U.S.)	3	1	53	28.2
Totals	8	1	187	100

Totals

Source: Motor Ship.

LOW SPEED ENGINES

The standards.

on a part of the smaller ship market normally serviced by medium-speed designs.

These engines, broadly in the 4.500 to 11,000 bhp range, are all basically scaled-down versions of larger bore designs, atthough the Mitsubishi is the industry and a market unique in offering two-stage turbo-charging for an engine of the smaller ship cent.

In today's tight situation when protectionist attitudes in shipbuilding appear to be continuously hardening, there is little likelihood of major changes in the balance of power in the industry and a market share analysis (to be published to the protection of the smaller ship market normally serviced by medium-speed designs.

These engines, broadly in the 4.500 to 11,000 bhp range, are all basically scaled-down versions of larger bore designs, although the Mitsubishi is in the industry and a market share analysis (to be published to show any major expected to show any major expected to show any major.

This has not been a period of designs have come on to the conservation capabilities of on a rather different tack. Girm revolutions per minute)

one of the most interesting one of the last 10 installation for a very large, nonths has been the emergence fast passenger liner or considerable for a little over 20 ompany's "very advanced proper cent of completions in 1977 pulsion" programme is based on a series of radical innovation.

This over the manual culture is manual culture accounted for a little over 20 ompany's "very advanced proper cent of completions in 1977 pulsion" programme is based on a series of radical innovation.

in the longer term. The main advantages in fuel medium speed are lightness and compactness added to a higher has also been working on the degree of operational flexibility, possibility of returning to coalbut the problems are a require—as a marine fuel for steam turment for higher grade fuel and, bines, again probably using a especially where more than one fluidised bed boller of the type engine is used in a ship, a proliferation of moving parts and engineering, but still unknown
therefore of maintenance costs.

at sea. Babcock and Wilcox of

Agreement

There is general agreement divided the marine engineering that the fuel issue will dominate world for 20 years. Yet, as the thinking of shipowners and therefore engine designers for some years to come. Fuel costs now account for well over 50 tor is concerned not with long per cent of an ocean-going ship's term hypotheses but the work-parent or a cost of the practical ship operational costs and even take increasing of his versel. operational costs and even tak- ing economics of his vessel-ing into account capital and At this point, steam a management costs on a high-crew cost flag such as that of Norway, the proportion of the other, each side accusing the

An approximately one-third advantage in fuel economy gave the diesel engine its fuel economy gave the diesel economy gave the mental edge over steam turbines in the 1960s, but with the marine world resigned to the marine world resigned to the marine world resigned to the fact of having to accept gradually deteriorating fuel grades (oil with more chemical imparts and of greater viscosity)

motorships with an 18 per cent advantage over steam in 1977, compared with a two per cent advantage in as prices rise, supplies become tighter and refining processes become more efficient, the equations are starting, at least in the opinion of some, to alter.

In October (1978), only 64 of the 1,696 ships on order in the as hard as now. Moreover, when mation, greater standardisation and higher environmental standards.

Trietste of Italy; and Doxford of reduction of operating costs for Britain), designed to encroach its slow-speed engines of 12 per of the tonnage in the world fleet on a part of the smaller ship cent. engines, although 35 per cent short, shipowners are ill-of the tonnage in the world fleet inclined to take risks with new is steam powered. The dismarine engine technology. parity between these two figures book compared with the substantial tonnage of that class already built with steam turbines because of the need for greater power both for propulsion and cargo discharge.

Unsurprisingly, the most vigorous proponent of the renascence of steamships theme is the world's biggest marine steam turbine manufacturer,

lates to produce useable diesel

Britain is co-operating with Stal-Laval on the fluid bed work. These factors have added new. zest to a controversy which has

At this point steam and

the diesel engine its funda-mental edge over steam turbines in the 1960s, but with the

Shipowners cannot afford to ignore such calculations when the larger companies' annual fuel bills range between £30m and £100m, especially in times times are hard and funds are

An odd sideline in this debate, simply reflects the rapidly however, is always the U.S., depleting large tanker order, which retains a strong steam which retains a strong steam turbine industry and in con-sequence, a fleet where diesel engines account for only 4 per cent of active ocean-going tonnage.

Because of fuel cost pressures, American owners have begun to force a change in this pattern (over one third of U.S. vessels on order are motorships) and the U.S. Government granted a temporary relaxation of laws preventing the import of foreign machinery.

Westinghouse now has a lowspeed licence agreement with Sulzer, and Colt has a longer-

MERCHANT VESSELS ON ORDER

	•	(OCTOBER, 1878 — VESSELS OVER 2,000 CW1)	
•	MOTORSHIPS STEAMSHIPS	Tankers Other than tankers Total No. DWT HP No. DWT 222 8.3m 2.62m 1,410 23.5m 14.4m 1,632 31.5m 1 54 9.1m 2.2m 10 0.5m 0.3m 64 9.6m	117 7m 2.5m
	TOTAL	276 17.4m 4.8m 1,420 24m 14.7m 1,696 41.3m 1	
		Source: Moto	r Ship

Whether the turbine mani- conditions necessary for econo-facturers can reverse this mic reasons for many ships in recent trend in the light of the today's market the diesel com-new fuels debate remains to be panies are adamant that the seen—they have certainly not technology is on-hand to designshown any lack of intent.

going to be difficult to dislodge end of the century it is impossion their present supremacy. sible to make predictions. Will They have experience of instalments in virtually all this ments in virtually all ship types and a record in the past five years of continuous, if unspectacular, product improve-

Although motorships can be

criticised, for example, for fature, will gas turbines and adapting less efficiently than gas/diesel combinations offer steamships to the slow-steaming power and environmental ad-

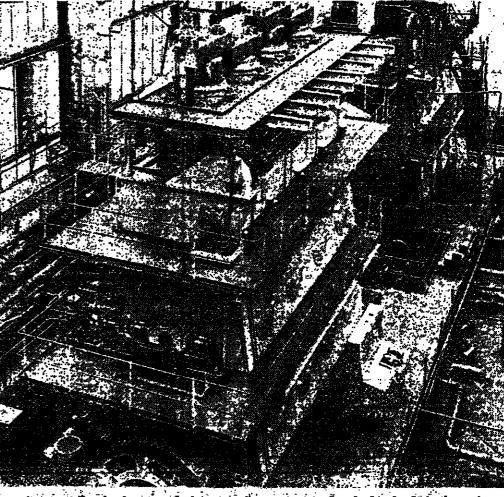
But in worldwide terms, the duised said deservation diesel producers

nuclear propulsion, already proven technologically for war-ships and in a smaller number of showpiece merchant vessels, have become politically and en-vironmentally acceptable?

Perhaps less distant into the manufacturers in Sweden and

vantages to justify the extra fuel cost? Certainly, these forths of propulsion could be of interest for specialised functions such as ice-breaking gas captilers, but it seems unlikely that the next 20 years will see a dramatic overthrow of diesel. Whether in that period turblines will establish a foothold to re-establish their dominance in the next century must de in the next century must de pend upon the success of the development programme now, quite properly, being inten-sively pursued by the turbine

the United States. Ian-Hargreaves



A recent Doxford opposed piston engine on test in Sunderland. It is the only all-British marine engine built at the British Shipbuilders works

A growing demand in small boats

ONE SECTOR of the market a year for marine diesels in the diesels. The two new Petters which the diesel engine manu-which the diesel engine manu-facturers believe will continue exists. It is expected to con-by conventional standards they facturers believe will continue to grow world-wile in a useful, if not spectacular, fashion is the small marine diesel.

"Small," in this context means engines of up to about 300 hp—the types which are used to power pleasure boats, fishing craft, work boats, pilot boats, customs launches, and similar vessels found along every inhabited coast of the

But in the developing countries the rate of growth is far higher. Even the diesel makers have been surprised by the volume of new orders from Third World nations during the

There are two reasons. Some countries—notably Sri Lanka, Taiwan, and South Korea— have cashed in on their plentiful low-cost labour coupled with skills—and often the avail-ability of local woods—to go into the pleasure boat business on a production-line basis. They are finding that they can under-cut boat companies in the developed nations by about 20 per cent. Virtually every new pleasure boat built in the

Policy

The second reason for brisk demand for diesels in the Third World is the newly fashionable policy of reinforcing local fishing industries by providing better equipment for inshore fishing. A new market has been created around parts of the Mediterranean, in Africa, Asia, and the Far East for robust reliable diesels of the simplest possible construction for installation in fishing craft.

its British-made engines over-family yachts and day-hosts, seas. It has produced a special Petrol engines used to dominthree-cylinder model for in ate that market because the shore fishing craft and is run- smallest marine diesels were ning a series of intensive diesel regarded by boat-owners as courses at Peterborough for unacceptably heavy, bulky, and visiting fisheries officers from noisy.

veloping nations. But now a revolution is: A world market worth £130m on in the design of

Rest of world 40,000 There are still a few com-panies in the market offering

In Europe the demand for trusted engines designed purely small marine diesels is for marine propulsion. Usually estimated to be rising at a they are heavy, slow-revving, comfortable 5 per cent a year, and designed for a life-time of arduous service. Britain's Thornycrofts and Kelvins are

But the volume sales are

going to the manufacturers in right, two other categories Com- The panies such as Perkins, Volvo argun and Mercedes have made their reputations with engines which are mass-produced (and which may derive from a basic design also used in other diesel applications) but are built up from the first nut and bolt as marine engines. The second category covers the great and growing business in standard diesel engines built on produc-tion lines—usually for truck use—and then "marinised." British Leyland and Ford engines are both marinised in Britain and Europe. Some companies are starting

to straddle both philosophies. Petters, a Hawker Siddeley sublightweight marine dieselslightweight marine diesels—the 6 hp Mini-Six and the 11 hp Mini-Twin—which began life on the drawing board as pure marine engines. But in order to extend the product range into higher horse-powers Petters is now buying and marinising the highly represental Vallenment highly successful Volkswagen Golf diesel

An elusive additional market for marine diesels now exists which the manufacturers are Perkins, which probably sells divided about and do not yet more small marine diesels than any other company, is now potentially vast market for manufacturing in 18 countries small lightweight dieselt engines and sending nine out of ten of ranging from 5 hp to 30 hp for the Buitish made engines over-

time to grow vigorously are extremely-light, thanks to Engines in that size range cater the widespread use of alumi-for the needs of most inshore nium alloy discustings in the

fishing and commercial craft construction.

and the bigger pleasure craft:

The market splits as follows ing that diesel propulsion is a feasible proposition even for

very important.
Several manufacturers are developing lightweight small Petters, the Japanese Yanmar and a few other designs sharing the market at present. The potential prize is big. The diesel makers believe they can capture the under 30 hp marine market from petrol if

Their biggest single sales argument is of course the com-parative safety of diesel fuel

compared with petrol.

BMW of West Germany is expanding into the marine diesel business in style. A new marine engine factory has been built in Bavaria and a range of engines ranging from 6 hp upwards is being developed. At the same time it looks likely that that company's utomotive experience with 5 ch tech-

experience with s.ch techniques as turbo-charging will be applied to new designs of high-revving and powerful, yet light-weight, marine diesels.

By the time a full range of under-30 hp diesels acceptable for small boats is on offer from the major manufacturers it is expected that the designers will be nearly ready to produce a be nearly ready to produce a further generation of engines. They will be the modern equivalent of the multi-fuel

Designs

Designers are calling them
"wide cut" fuel engines, meaning that they will be able to
run on a wide-cut fuel fraction;
sliced from crude oil during the
refining process. That is seen
by some companies as the best contribution the diesel manu-facturer can make towards greater economy in the use of

the world's oil sumplies.
Such engines will need a formof ignition system—unlike the pure diesel concept—and will be something of a hybrid of

Roy Hodson

Word Records by Mercedes Turbo-Diesel fitted with Nueral-Pistons

by Motor Ship, next month) is not expected to show any major

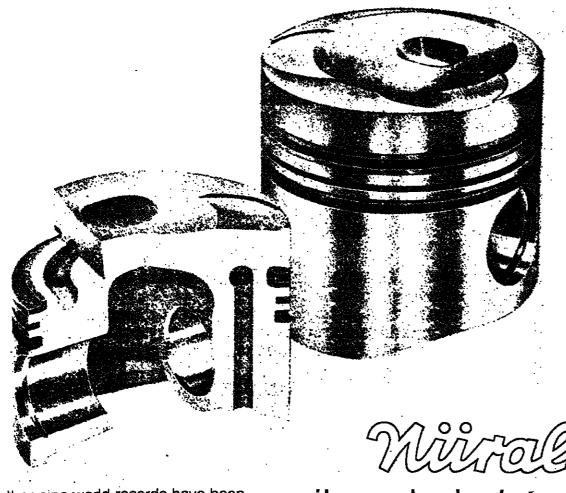
changes from the 1977 figures

Medium speed engines (i.e.

engines operating at above 220

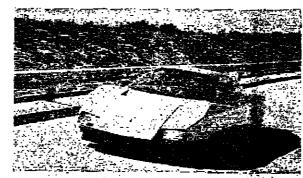
revolutions per minute) accounted for a little over 20

tabulated on this page.



A further nine world records have been established by the new Mercedes C 111-III five-cylinder turbo-charged diesel engine using Nueral oil cooled pistons. Nueral oil cooled pistons were also used in the Mercedes C 111, the record breaking car of 1976. Once again Nueral pistons have given an outstanding performance under extremely severe operating conditions. The Mercedes OM 617a engine now in current production is also fitted with Nueral oil cooled pistons, thus demonstrating Alcan's continuing success in the field of piston design and development.

oil cooled piston



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LEYLAND 6-98 TURBO. NOW THE PRINCIPLE WORKS TO PERFECTION.

Turbocharging is a great principle.
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It uses energy which would otherwise go to waste to make an engine more efficient and

more economical.

Exhaust gases

Exhaust gases

In practice, however, it has often made engines less reliable.

nam

lts

Not any more. For the past four years Leyland have been developing a turbocharged engine that offers all the benefits. And none of the problems.

It's called the Leyland 6-98 Turbo.
To make it we didn't just fit a turbocharger to an engine. We redesigned our engine to fit a turbocharger.

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Nitrided crankshaft, chrome flash liners, and toughened crankshaft clamps all increase durability.

Redesigned pistons with iron inserts improve oil consumption, and stronger castings eliminate head and crank case problems.

Even the turbocharger itself has a special lubrication system, to prevent overheating.

We tested all the improvements we made. Rigorously. On the bench. And, for the past year, on the road under actual operating conditions.

What's more, many of these improvements have been carried over into the rest of the 98 series engine range.

So they're all better. Tougher and more reliable than ever. From the 69bhp 4-98 naturally aspirated engine through to the 137bhp 6-98 Turbo.

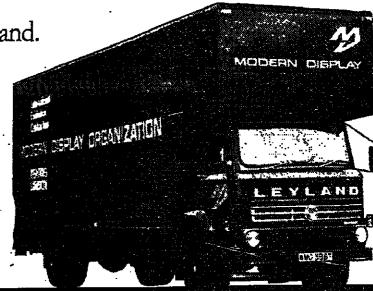
And like all our trucks, the 98 series engines are backed by the biggest Parts and Service network in the business.

Get in touch with your nearest Distributor.
And see for yourself how well the
98 series engines power the FG, Terrier and
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DIESEL ENGINES VIII

The diesel engine industry is an international business. with most of the leading Japanese, European and American companies competing actively in each other's markets. On this and the following six pages the state of the industry in the main producing countries is examined, along with profiles of some leading companies.

Strong point of Britain's engineering industry

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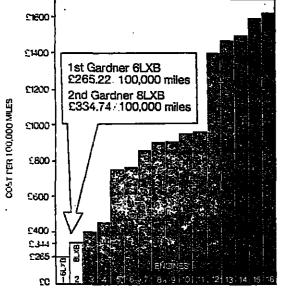
PA type from 750 to 5.300 kW. PC type from 2.220 to 19.980 kW.

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> From an analysis of reliability of 9488 British and foreign vehicles comprising 16 engine types, the Gardner 6LXB as expected took 1st place and the Gardner 8LXB, in second place, proved to be over 17% more reliable than the closest competitor.



HAWKER SIDDELEY L. GARDNER & SONS LTD

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DIESEL ENGINES are among the strong points of the British the few sectors in which UK production matches or possibly exceeds that of West Germany. In Perkins Britain has Europe's largest manufacturer of diesel UK-based producers are strong in their particular sectors of the market. In contrast to some other areas of mechanical engineering, there is no lack of powerful and well-financed companies which have invested heavily in diesel engine manufacture and are continuing to

Yet despite these assets Britain's share of the world diesel engine market has tended to decline in recent years. Whether this trend can be reversed depends on two factors, one of which is outside the direct control of the engine manufacturers. The first is the competitiveness of the UKbased original equipment manufacturers (OEMs) who instal diesel engines in their machinery. The second is the ability of the engine manufac-turers to establish worldwide sales and service networks of

In the range up to 30 hp Britain is well placed, having two companies, Lister and Petters (both part of the Hawker Siddeley Group), with a worldwide reputation in their field. There is strong competition from the Italians and Germans, while Japanese companies, led by Yanmar, have done well in the Far East and other developing countries. nificant competitor.

The biggest battleground in the next few years is likely to be in the 30-500 hp category. Several of the major engine manufacturers are directly asso-ciated with OEMs who provide the base load of their business. Thus Perkins is owned by Massey-Ferguson and about 40 ner cent of its UK engine pro-

WORLD OUTPUT	
(per cent)	
Commercial vehicles/pas- senger cars	14
Farm tractors	2
Construction equipment/ industrial/marine	1

UK diesel engine applications decade. (30-500 hp—per cent) Automotive

Ferguson equipment. Ford, the second largest diesel engine manufacturer (it makes around 250,000 engines a year in the UK compared with Perkins' worldwide output of some outlet in its own tractors and trucks which has enabled it to build up a growing industrial engine business with outside customers. The Dorset range 250 hp and the York range goes from 54 to 80 hp.

Even those engine producers which do not have a captive outlet for their products depend for an important part of their sales on UK-based manufacturers of original equipment. If, for example, truck makers like ERF, Fodens and Seddon-Atkinson were to disappear from the scene because they could not compete against foreign suppliers like Volvo or Daimler-Benz, this would be a serious blow to the engine suppliers—Cummins, Gardner and Rolls-Royce Motors. If major construction equipment makers like J. C. Bamford or Aveling Barford either went out of business or were swallowed up by large U.S.-based companies with their own engine-making capacity, this too would weaken the foundations of the British diesel engine industry.

Concern

So the fact that about half the UK market for heavy-duty trucks is supplied by imports is a matter of serious concern for the engine builders. Equally, the Kirloskar of India is also a sig- British motor industry has not so far made much of a contribution to the development of diesel-engined cars—though in this case the engine is more likely to be made by the vehicle manufacturers than by outside engine suppliers.

The one end-equipment sector in which Britain is unusually strong-farm tractors-unfortunately happens to be the one with the least exciting growth prospects. Britain is easily the largest exporter of tractors, out the principal manufacturers, including Perkins' parent Mas sey-Ferguson, have been hard hit by a weakening of demand in several key markets. Most forecasters predict a rather modest growth rate for diesel engines in tractors and related applications over the next

In generator sets. another important outlet for diesel engines, there is a strong UK-based industry, with companies like Dale, Petbow and Dawson Keith enjoying a substantial export business; several of the

PRINCIPAL UK MANUFACTURERS Parent

Company Perkins Vauxhall/Bedford Cummins Engine Rolls-Royce Motors Leyland/Rover/Austin Morris APE-Crosslev

Dorman Paxman Kelvin Petters Mirriecs Blackstone

Doxford

Massey-Ferguson (Canada) General Motors (U.S.) Cummius Engine (U.S.)

Amalgamated Power Engrg.

General Electric Company

Hawker Siddeley British Shipbuilders

engine producers also make their own generator sets. Here too the industry has been affected by problems in a few important markets, including Nigeria, Iran and Iraq, but the long-term future for this sector The hope is that Continental of the business—and the compe-titiveness of UK-based manufac-

turers-seems sound. overseas-based OEMs, but in the plier, not easy to wean local groups

a new Volkswagen van. The From time to time there have least nationalistic of the OEMs been suggestions that the UK-are probably the American-owned Sector of the diesel

also a number of smaller truck own engines; SISU in Finland, for example, buys engines from Leyland and Rolls-Royce Motors

truck manufacturers which now use their own engines, like Renault Industrial Vehicles in There is of course scope for France, can be induced to switch direct exports of engines to to an independent engine supmajor industrial countries it is engines to Ford for use in the Transcontinental truck, which is away from their national sup-assembled in Amsterdam. pliers. Sometimes it is neces- British engine manufacturers Amsterdam. sary to set up local production are discussing possible supply facilities—as Perkins did in arrangements with several Con-Germany to supply engines to tinental truck companies.

owned companies which operate engine industry could benefit throughout Europe. There are from rationalisation - that is,



The Liner Giraffe powered by a Ford 2711E four-cylinder diesel engine

acquired a minority holding in Gardner and later made an unsuccessful bid for Fodens, the heavy truck company, some Government officials were attracted to the idea of a threeway link-up leading to an integrated truck and engine manufacturer, a small-scale version of Detroit Diesel in the U.S., which supplies engines to its parent company, General Motors, as well as to outside customers. But the Gardner case Fodens was seen more as a means of diversification for Rolls-Royce than as a captive outlet for its engines.

With Gardner now firmly in unlikely to change.
the Hawker Siddeley camp Rolls But the outlook Royce Motors is pursuing an independent strategy as a specialist supplier of engines to automotive and non-automotive markets. The range is from 200 engines coming on stream at the Shrewsbury factory, complementing the established in-line range, will widen Rolls-Royce's markets. Capacity, now around 6.000 engines a year, is expected to rise to more than 10,000 engines in the early 1980s.

Mergers between UK-owned

engine manufacturers are probably not very relevant to the industry's attempts to expand its share of world markets. It is interesting that GEC and Hawker Siddeley, both of which have several diesel engine manufacturers within their portfolio, have not attempted to rationalise them; each company remains responsible for designing, making and selling its own products. Especially in the higher horse power ranges, the diesel engine industry affords opportunities for the smallolume specialist who carefully cultivates his chosen customers; APE-Allen, the Bedford-based subsidiary of Amalgamated Power Engineering, is one such company, with diesel engines ranging from 400-4100 hp. Its

What may make more sense than mergers between British companies are acquisitions of. or partnerships with, everseas acquire Baudouin in France and Alco in the U.S. Hawker Siddeley, too, has made acquisitions in the U.S. The diesel engine manufacturer needs to be in a position to service his existing OEM customers, who

a Pielstick licensee.

from mergers — to achieve may be exporting their equip economies of scale ment throughout the world, and Rolls-Royce Motors to develop new OEM business; both require a substantial investment overseas, including local manufacturing facilities

Yet however successful the UK-hased engine makers are in developing direct exports, they need a strong home base in the form of British OEM customers who can hold on to the bulk of the domestic market and com-pete internationally. In this context the future of the motorcustomers. But the Gardner industry and of the truck manu-Board rejected Rolls-Royce facturers in particular Is of Motors' approaches and in any crucial importance. Both Kord and General Motors (Bedford) have made Britain their main European production base for commercial vehicles and this is

But the outlook for Leyland Vehicles, which has just under gone another change of top management, is less certain There has been talk of partner ships between Leyland Vehicles and other European truck many facturers; it is not clear how such an arrangement - might affect Leyland's engine produc Another possibility, in view of the cash-limitations to which the whole of BL subject, is that Leyland Vehicles could gradually increase its offtake of engines produced by outside suppliers, rather than investing in major new engine developments of its own.

Disappointing

In the meantime Leviand is actively developing its engine sales to outside customers, under the "Power Systems" banner. The aim is to provide from the UK a third force in world markets alongside Perkins

It is clearly in the interests of the diesel engine industry that the competitiveness of the turers should be improved and the tide of imports pushed back. It is disappointing that while including IVECO, Volvo and Renault, are making plans to sell their medium and heavy-duty makes larger engines for marine their medium and neavy-duty and stationary applications, it is British participation in this British participation in this market. Equally, it is important that BL's belated entry, or reentry, into diesel-engined passenger cars should be successful The conclusion seems to be companies as a means of that the UK-based diesel engine developing new markets. It was manufacturer must do all he this thinking that led GEC to can to help the end-equipcan to help the end-equipment makers improve their performance, while at the same

time spreading his risks through

the development of new OEM

customers overseas.

G.O.

Big changes ahead in the UK marine sector

alised, with the takeover in builders similar designs from hardly a matter for comfort. for BS companies are expected builders in England and Scot- spite of a chronic shortage of builders in England and Scot- funds. BS has invested in new Pielstick of France. These companies - Barclay

Curle, J. G. Kincaid and Scotts Engineering on Clydeside, and challenge. Doxford, George Clarke/NEM and Hawthorne Leslie on the North East Coast — are now part of British Shipbuilders (BS). Their only domestic com-betitor in the slow-speed field shipbuilders for exceeding its petitor in the slow-speed held powers.

Is Harland and Woolf of This proved to be a legally Relfast also State-owned and Belfast, also State-owned, and untenable course of action and

expected to occur without Mirrlees Blackstone, are seek-severe convulsions, especially as the best operation of the best operation the point at which they now suade shipowners placing con-

hand.

So far there have been two important developments since nationalisation. The first was the decision to take Barclay Curle, the second smallest of their business up to now. The provate annual capacity of 72,000 bhp, out of engine building altogether. This company is now in excess of demand, the private in the process of moving into in the process of moving into BS's general engineering divi. increase in domestic capacity, sion and for the foreseeable. The effect, they argue, will be future will be working as a to destroy two private sector.

ducts to Vickers Engineering British Shipbuilders.

The second big step was the So far, however, British separate decisions by British Shipbuilders has not won any The second big step was the separate decisions by British Shipbuilders has not won any Shipbuilders and Harland and Wolff to attack the medium and APE at least finds itself Typical output in recent years speed marine diesel market with one of the healthiest order. British per annum, but present labour and now received seven orders they remain the only British for what it regards as a break challenge in the smaller end of marine engine in the smaller end of marine engine in the side of through in the smaller end of marine engine in the slow speed design.

This Doxford 58JS, a three-

funds. BS has invested in new plant to allow Hawthorn Leslie lead its medium-speed to

The private sector of Britain's marine diesel industry reacted strongly to these licensing developments and explored the possibility of suing British

Belfast, also state-owned, and licensed to manufacture Burthe private manufacturers, meister and Wain slow and which include such famous names as GEC, Amalgamated names names as GEC, Amalgamated names nam This major reorganisation Power Engineering (APE) and could hardly have been the Hawker Siddeley subsidiary expected to occur without Mirrlees Blackstone, are seekhave only three months work in tracts with its yards to specify hand.

tracts with its yards to specify engines built in its own shops,

sector is dismayed at any subcontractor for defence pro-ducts to Vickers Engineering. British Shipbuilders.

The changes so far in the industry since nationalisation are likely, however, to be dwarfed by the changes to come. British Shiphuilders will come. British Shiphuilders will basis of these projections—in the course of this year he assuming they are accurate attempting to apply the terms of its first corporate plan.

Planning

Planning has to start from the fact that most of the enginebuilders are financially weak and have suffered in the past from chronic underinvestment. Before nationalisation the UK Government displayed precious little interest in its marine engine industry and by a process of too little investment and research too late effectively killed off Britain's marine steam turbine industry. British power engineering companies like GEC and Babcock and Wilcox retain some interest in the marine field but certainly Britain would be poorly placed to take any share in the revival of interest in steam turbines which some sides of the indus-

Medium-speed output is pro-jected at between 21,000 bhp and 42,000 bhp.

for British Shipbuilders to continue its operations very much on the existing pattern, with a need to shed only a small amount of labour for a temporary period of about two years. executives, however, BS

It is clearly possible on the

favour using the clearly recession to regroup and ford's standard opposed piston rationalise engine building four cylinder engines, and with activities to produce larger, a range of 5,000 bigs to 27,000 stronger, and more competitive units for the future.

controversial, and therefore less likely to prove politically accept-able to Britain's Labour Government, is a further option under study to close down the Doxford company in Sunderland, with the research into low-quality fuels loss of 1,000 jobs, and put production of Doxford-designed engines — the only pure British slow-speed designs in existence into Hawthorn Leslie.

Index the terms of the BS corporate plan to take further the research into low-quality fuels and enhanced performance of the Doxford designs.

With a world market share now at the humiliatingly low-level of around 1 per cent. Dox ment, is a further option under

city of just over 700,000 bhp successfully developed, tested per annum, but present labour and now received seven orders.

THE SLOW-SPEED marine Harland is now licensed to build books in the UK industry, and 450,000 bhp—the latter cylinder direct-drive two-stroke diesel engine industry in Germany's MAN medium-speed although the prospect of nine achieved in 1976, the best year. engine capable of 5,500 bhp and British Ship months security of workload is Total slow-speed completions 220 rpm, is very much a chal-220 rpm, is very much a challenger in the traditional terri-tory of the medium-speedgeared engine. It has attractively low fuel consumption and claims the ability to burn without ill-effect fuel of lower quality than is possible for medium-speed designs. It has of course its slow-speed competitors from the main European designers, but none of these is a three-cylinder engine and Doxford believes that its product will show better main-

tenance costs as a result. The adoption of constant pressure turbocharging has also improved the efficiency of Doxbhp the company believes it is well placed to attack what is certain to be a market for pre-To this end it seems certain dominantly smaller samps in that there will be an amalgama-dominantly smaller samps in that there will be an amalgama-dominantly smaller samps in the tion of Scotts and Kincaid on the next few years. Certainly noclyde and of Hawthorn Leslie one is now regretting the clarke. Much more failure to get into the superlarge-bore engine range for bigger, faster ships. Funds are expected to be made available under the terms of the BS cor-

on the diesel engine side

British Shipbuilders' five companies (excluding Barclay Curle) retain a physical capacity of just over 700,000 Line clearly have a long way to go to recover their former states. But they remain the only British challenge in the light



PROFILE-PERKINS

The world's major manufacturer

PERKINS Is the world's major into the construction equipment engines at the top end of the Perkins is constantly negotiating superhuman schemes like should be simplified for the deplant has produced over 64.000 diesel, engine manufacturer business, and then was caught horse power range. Perkins has about possible local manufacture power stations and airports. In veloping countries."

Tast year about 560,000 Perkins by a downtum in nearly all its light-weight, high-speed S0 hp to which most of them now lasist producing simple diesel power. Apart from the developing the U.S. facility, without much engines were made and the operations (Perkins contributes group has the capacity to make

The range of Perkins diesel 255 hp and its products are specified as original equipment by more than 600 of the world's leading manufacturers of vehicles, agricultural machinery. construction machinery, indus-trial equipment and marine

There are about 35m Perkins engines in operation in more than 2,000 different applications throughout 162 countries.

The group's 4.2082 industrial engine is the most widely used diesel fork lift truck engine in the world. In all Perkins claims that its engines are used in more than 30 per cent of the world's material handling equipment in 35 per cent of diesel combines; 31 per cent of of engines and components. In wheeled tractors; 10 per cent in 1977-78 financial year (end of commercial vehicles; 10 per cent of generating sets and 8 about 200,000 engines compared with 200,000 engines compared per cent of pleasure craft. If with 220,000 in 1976-77 and a Japan is excluded, it also has peak of 269,000 in 1975-76.

14 per cent of the compressor which once totalled 12,000, has

Around 40 per east of Perkins' output goes to its parent company. Massey Ferguson of Ganada for use in agricultural and construction equipment. Of the 300,000 of so engines Perkins sold to organisations outside M-F last year, 10 per cent went to Asia, 8 per cent to the Middle East Mr. Hoffman says the group and Africa and 38 per cent to is expecting worldwide an 8 per Tatin America....

ill day.

34. A.

LICENCE

Perkins has four wholly one of Perkins keys to owned plants. The biggest is at success has been the flexibility Peterborough in the UK, and the others are in Brazil, where current output is around 50,000 example, the 6,354 unit is used the price of the flexibility of applications for any one engine type. To take but one example, the 6,354 unit is used to be a price of the flexibility of applications for any one engine type. To take but one example, the 6,354 unit is used to be a price of the flexibility of the f current output is around 50,000 example, the 6,354 unit is used engines a year, the U.S. (Canton, in trucks, buses, pleasure and Ohio), where production is work boats, earthmovers, geneabout 20,000, and West Germany rator sets, compressors, and also where capacity is 26,000 a year. a range of agricultural equip-However, Perkins engines are made in 19 countries all told. In 13 of them Perkins has less that Perkins has been able to than a 50 per cent shareholding in the manufacturing concern or they are being produced

under licence. Perkins was founded by the from Japanese manufacturers. late Mr. Frank Perkins in 1932 Buf Perkins has the odd one per in Peterborough. During the cent of the market, thanks to Second World War the company the marine application of its direction. in Peterborough. During the cent of Second World War the company the mari expanded dramatically. In 1959 diesels, it was acquired by Massey. Parking

about 14 per cent of M-F's total annual sales of around \$3bn compared with the agricultural equipment operations 73 per

(ent). The parent group has been is certainly not included in any disposal plans.

Last financial year, which ended on October 31, Perkins sales tumped by about 20 percent in value to more than \$740m. And according to Mr. Wichael Hoffman the observer Michael Hoffman, the chairman and managing director, Perkins remained profitable.

But the main plant at Peter-borough has felt the effects of the same weaknesses in demand which has caused M-F problems. Peterborough is the only Per-kins plant offering a full range Deen gradually reduced, mainly

by natural wastage, and is now down to 9,600. In spite of M-F's problems, Mr. Hoffman says that Perkins expects to maintain investment at Peterborough in real terms. This would involve lifting the \$19m spent in 1978 to around

\$23.75m. Mr. Hoffman says the group cent increase in unit sales to third parties next financial year

This flexibility is the reason penetrate that almost impenetrable market Japan. Some 99 per cent of the diesel engines bought by Japanese users come

ranges are complementary.

Perkins belief is that it should make sure it builds up a reasonable presence in Japan because sooner or later the Japanese diesel engine exporters will be sationalising its construction making a very large impact on equipment business but Perkins the third world, third market the third world, third market countries in which Perkins cur-rently predominates.

The Yanmar relationship is a good example of the principle that a European exporter's best agent in Japan may often be a company in the same industry but with a different range of countries.

250 hp engines so the two upon At the end of last year, for example, discussions were in train in Colombia, Egypt, In-donesia, the Philippines and Taiwan as potential new manufacturing territories—in partnership with local governments or interests - and talks about a pos-

> licensec, were also going on. Mr. Roger Clark, director of sales and marketing, says that the multi-purpose diesel engine has an important part to play in the future of the developing

sible new joint venture in Pakis-

tan where it already had a

can give people light when it is dark, pipe fresh water to them, help with the transportation of goods, improve fishing facturing facility at the Ursus and the turning of soil." he adds. He recalls that the mechanis-

ation of 2,300 fishing boatsby the addition of small diesel units - turned Sri Lanka from a net importer of fish to a net exporter, while employment in the industry increased.

But the developing countries need simple diesels. "There is a limit to the technology you can remove from a diesel en-

countries, Perkins is also wellrepresented in the Eastern bloc taken to a 100,000-a-year capacountries. A new engine manutractor plant near Warsaw in Poland which has been com-pletely refurblshed by M-F and Perkins recently came on

And, of course, contacts have begun with the new outward- up and suggests there could well looking Chinese Governmentsignificantly at the invitation of

the Chinese themselves.

There is a great deal of excess capacity in diesel engine in-

additional investment, could be city, the same as Brazil.

But the group does not believe its forays into the developing countries or the Eastern bloc will contribute to over-capacity problems because by 1981 or thereabouts it expects current surupluses to have been mopped be a shortage.

"In any case, most of the countries we are looking at are diesel engines. Either way there those where a big growth in would be no profit in it for demand for diesel engines can Perkins. or with a different range of countries.

"There is a need for human- gine. But to the maximum dustry, as there is within be expected," comments Mr. In the developing countries, sized projects rather than extent possible the engine Perkins itself. The Brazilian Clark.

One part of the diesel engine market that Perkins will continue to ignore, even though it offers in the medium-term the greatest growth in demand, is that for car diesels.

As far as Perkins is concerned the market will either be too small to justify the research and development investment to produce a diesel tailored specifically for cars, or demand becomes so huge that the car assembly groups will design and build their own

Fierce competition in generators

design and manufacture of workforce.

diesel generator sets. It is These countries were good posture which is causing it some difficulties at present

portion of their former levels.

The world market is reckoned to be worth between £150m and £200m annually, of which UK manufacturers might take between 15 and 20 per cent. Yet their strengths have been in certain countries which for a variety of reasons have cut back generator orders to a small pro-

> The three major countries in this category are Iran, Iraq and Nigeria. In the case of Iran, ordering was falling away even before the current wave of troubles, and tariffs had shot up. Iraq has imposed a general boycott of UK goods. Nigeria, which at its peak took an estimated 25 per cent of UK production, has raised its import charges from 5 to 50 per cent and raised the minimum deposit of letters of credit from 30 to

100 per cent.

All the UK manufacturers expanded dramableary. In 1959 diegals.

All the UK manufacturers— European countries have it was acquired by Massey. Perkins in Japan is linked and others around the world— developed diesel engine and the pinch, and in generator set industries of their M.F.'s recent problems have manufacturer Yammar. Yammar direct proportion to the extent own, But it is by no means a affected Ferkins. The parent is strong in the 5 hp to 30 hp, their production was export-closed market and Perkins, the group increased its debt load engines for rice paddy tillers bound. Petbow, for instance. Peterborough hased world so as to expand, particularly machinery as well as in heavy which reckons that as much as leader in diesel engine produc-

wide experience in world a comprehensive national grid markets. Yet it is this very and (b) they were comparatively well developed (and developing fast, at least in certain sectors) and thus required generator sets for plants or villages. However, in adverse times, as a number of the manufacturers ruefully admit, it is capital equipment which is hit first. "We have suffered early from the contraction in certain markets," said a Petbow executive, "other manufacturers have still to feel the full effects." More optimistically, the same manager saw an early upturn again for his industry, and says that the UK industry has not suffered any more than any other, and is

thus relatively as strong as ever. There are of course other markets, both in the Middle East and in Africa, as well as in Latin America and the Far East. China inevitably crops up in the projections for future markets Europe itself is naturally a more difficult sales area, since most European countries have

more than a third of the engines surplus capacity. This in turn of themselves—are made happy actively export-oriented, and has markets because (a) they lacked to the nearly 13,000 diesel sets is because they have anticipated by others' distress. In their manufactured in the UK last an earlier conversion by the case, it is the distressing pros-financial year. It ascribes its automotive industry to diesel pect of power failure which success with export-oriented power Though this move is now stimulates sales—and it seems companies as being due to the strengthening, it still leaves too that a number of companies and network of agents and distribu- much production chasing too institutions, and even a few tors it maintains in almost few customers. Hence the major every country in the world, and manufacturers, like the U.S. to its newly adopted "care-card" scheme. This operates by having a card attached to the This operates by engine which is detached by the end-user and sent to the local set manufacturers — where Perkins agent, who is then their competitors manufacture responsible for servicing. Mr. Brian Gomm, Perkins'

> servicing is extremely important these components are available in the market. The engines at prices lower than they would in the market. "The engines themselves are fairly simple, be otherwise. There are two crucial com- "We are in engine is 40 per cent of the set manufacturers, then you'll keep your market and expand

One of the major reasons why

companies Cummins and Caterpillar, are pushing hard in the diesel generator market. This has a two-fold effect on UK sets, they find the competition all the fiercer. However, where UK sales manager, reckons that they sell engines, they find that

"We are in a very cyclical dustry," says Mr. Peter arley, Petbow's marketing industry, says Mr. Peter Varley, Petbow's marketing director, "we are easily influinternationally competitive enced by political events world wide. The industry has had a pete on servicing and to efficient at that you have to have past year, but it has taken world-wide coverage. The measures to cope with the adversity and I think we're set worth of the generator set, and for a rise again soon. The deit's the most important part. If mand for generator sets in the you can offer good after-sales developing world is very strong service to the customers of the and the long-term trend is up. There have been political and economic problems only on the short term.

Part of the optimism about Siddeley, together with the

THE UK ranks with the U.S. 80 per cent of its production tion says that the sets-using its competition is reckoned to be so the future stems from a sig-independent companies of Pet-West Germany and Japan as one is for the export market, has engines sell well in Germany, fierce is that diesel engine nificant rise in orders from the bow. Dale, Dawson Keith, G and manufacturers, especially those in the U.S., have considerable manufacturers—as they observe first two are of course groups: individuals. private individuals, have decided that this year there may be a power crisis, or at sidiaries. least widespread power cuts. This sober reckoning has not resulted in a sharp uplift in set manufacturers, using engines home sales; rather has there from a variety of suppliers, been a steady increase in the including Perkins, Rolls-Royce domestic market, one which and Cummins in the U.S. All shows no sign of falling for the make both standby and base-load moment.

The buyers include factories, offices, local authorities and of course computer companies, where instant stand-by power is essential. So important has this part of the market become that in the view of some in the industry, it may wholly compensate for the loss of trade in the export market if there is a winter of discontent "--as the industry refers to it - in the months ahead. The UK market is currently reckoned to be worth around £20m, and may grow substantially.

The major UK manufacturers include the General Electric strike. Company (GEC) and Hawker

GEC's diesel companies are Dorman, Kelvin, Paxman and Ruston in the UK, with Baudouin in France and Also in the U.S., of which the latter has a considerable presence in generator sets. Hawker has the Lister, Petters, Gardner and Mirlees Blackstone diesel sub-

Dale, Petbow, and Dawson-Keith, by contrast, are specialist sets, with some production too of small transportable sets. The major independents each employ between 700 and 1.000 workers. and are strongest in the small to medium sets, from around 25kW to 2MW.

Forecasting future trends is dangerous, say industry executives. The more optimistic quote the view of stockbrokers Laurence Prust, who believe that the present weakness in the world market is the last of a long series of hiccups. Others say that better times will wait on an upturn in Third World buying power, or a prolonged power engineers' or coal miners'

John Lloyd

Behind many a good diesel you'll find Newage know-how...

... Newage Stamford Range A.C. generators in generating sets. Newage heavy duty gearboxes and axles in dumpers and site vehicles. PRM marine gearboxes in yachts and pleasure craft. And Newage propellers on trawlers and workboats.

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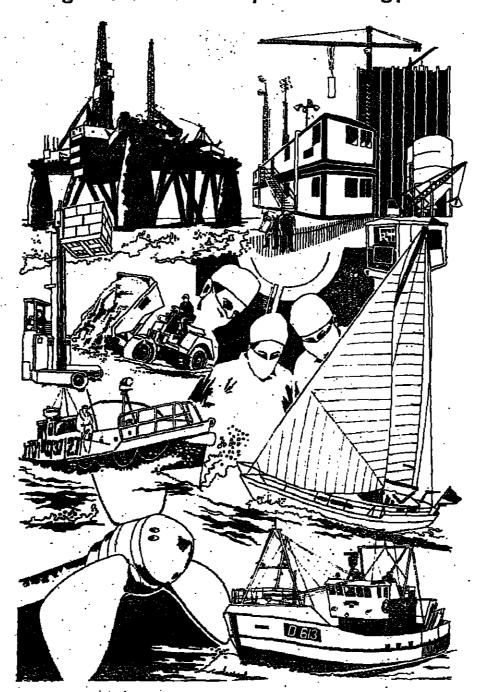
Transmissions Division

Based at Coventry, the Newage Transmissions Division ranks as a leading supplier of heavy duty gearboxes to UK off-road vehicle manufacturers. Some 95 per cent of British-built dumpers have a Newage gearbox—and in a growing number of site vehicles you find Newage axles made at the Division's factory at livine, Ayrshire. There's Newage reliability afloat as well, in the shape of the Division's PRM range of gearboxes increasingly used in yachts, mictorboats, inland waterway pleasure craft and small workboats.

Marine Propulsion Division

At Shaw, Lancashire, Newage's Marine Propulsion Division specialises in the production of multi-pitch and solid propellers. For trawlers and workboats, with engines from 200 bhp to 1250 bhp, the Division's H2P Range of two-pitch propeller systems has

They can save upwards of 30 per cent on fuel consumption, give increased pulling power-and help protect engines and gears from overload damage. Good news for manufacturers of good diesels!



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West Germany's team

THE WEST GERMAN diesel of Kloeckner Humboldt Deutz Ruggerini in Italy. Hatz has struction equipment, farm diesel engine market. It is one generating sets and 2 per cent in made a particular speciality of machinery and generating sets. Of the leading European rail traction.

KHD), the subject of a made a particular speciality of machinery and generating sets. Of the leading European rail traction.

MWM (Motoren-Werke Mann-represented in all horse power categories, from the smallest to world diesel engine industry is speed engines for marine and heim), a subsidiary of Ruggerini in Italy. Hatz has struction equipment, farm diesel engine market. It is one generating sets and 2 per cent in machinery and generating sets. Of the leading European rail traction.

A fast-growing force in the suppliers of low and medium-separation of air-cooled diesel engine industry is speed engines for marine and heim), a subsidiary of Ruggerini in Italy. Hatz has struction equipment, farm diesel engine market. It is one generating sets and 2 per cent in machinery and generating sets.

A fast-growing force in the suppliers of low and medium-separation of air-cooled diesel engine industry is speed engines for marine and heim), a subsidiary of Ruggerini in Italy. Hatz has struction equipment, farm diesel engine market. It is one generating sets and 2 per cent in machinery and generating sets.

A fast-growing force in the suppliers of low and medium-separation of air-cooled and air cooled and air cooled are generating sets. engine industry is strongly represented in all horse power categories, from the smallest to the largest. The engine manufacturers have the advantage of turnover in 1977 of about a large home market: German DM 4bn. It is the world's lead-original equipment manufacturer of air-cooled turers are for the most part diesel engines, a major producer loyal to their domestic suppliers of tractors and farm equipment and it is not easy for British, and—its fastest-growing business French or Italian manufacturers in gain a significant share of tractor, particularly in the field the market, although several of of non-ferrous metals and them are trying hard to do so, cement. What had been its Both the engine makers and fourth leg. Magirus-Deutz comtheir customers have been mercial vehicles, is now part of affected to some extent by the rise in the Deutsche Mark and this has probably helped to stimulate moves to establish overseas production facilities, particularly in the U.S.

The company with the widest Liste range of engines is Deutz, part and

With more than 32,000 cm-ployees KHD had a worldwide -an international plant concement. What had been its mercial vehicles, is now part of Iveco, in which KHD holds 20

major producers are Hatz and Lombardini

per cent and Fiat the rest.

2 3 and 4 cylinder engines in the range from 10 to 60 hp. Hatz, Farymann and Deutz small engines are widely used in construction equipment and a variety of other industrial applications.

In the high volume 30-500 hp category Deutz is again a strong contender, but the largest producer in Germany is Daimler-Benz. This company has a big internal requirement for diesel engines in its own commercial In the lower horse power Daimler-Benz produced 187,000 ranges, below 30 hp, the two commercial vehicles and 166,000 diesel-powered passenger cars. With this strong base Daimler-Farymann, direct competitors to With this strong base Daimler-Lister and Petters in the UK Benz is an important supplier and of non-captive engines for con-

an outstanding success with the stroke engine group consists of diesel-powered version of the five engines that provide ratings Golf passenger car. Volkswagen between 1200kW and 23.850kW Golf passenger car. Volkswagen between 1200kW and 23,850kW is likely to produce well over and the two-stroke group offers 100,000 diesel cars this year and four engines covering the range the Golf diesel power unit is being sold to outside customers for industrial and marine applications.

Competitor

duce diesel engines.

MAN is a strong competitor, are used an ships, 42 per cent in in two distinct segments of the heavy vehicles, 8 per cent in

PROFILE-SAAB-SCANIA

world diesel engine industry is, speed engines for marine and Volkswagen, which has achieved power applications. The fourfour engines covering the range between 3,540 kW and 32,400kW, In addition, MAN produces the D25 family of high-speed diesels for use in its own and other companies' commercial vehicles; it is also used in heavy con-

Another German car manu. MTU (Motoren-und Turbinen facturer, BMW, is engaged in a. Union) produces engines in the joint venture with Steyr-tange 400-7,000 hp and its Daimler-Puch of Austria to pro- annual output is about 2m hp. Some 47 per cent of MTU diesels

struction equipment, boats and

generating sets.

Bremse, produces two main groups of engine small engines from 5 to 125kW and top speeds in the range of 2,509 3,060 rpm in the range of 2.20053,000 rpm; and large engines of 100-5,500 kW and top speeds of 400-1,800 rpm. It has exemsive manufacturing interests outside Germany, including Spain, Brazil and the U.S. Finally, one of the leading Earth pean producers of medium pean producers of medium, speed engines for finance and other applications in Mak Maschinenhau, a subsidiary of Fried Krupp GmbH. These engines are used extensively in offshore supply vessels and in stationary applications for power generation.

PROFILE—DEUTZ

U.S. expert joins Rugged Swedish German group

A BLEND of German manufac- main segments-related turing and design skills plus energy American marketing know-how engines -that appears to be the thinking behind the unusual appoint- machinery) and natural re- phasises that it is done on "an ment last year of an American, sources (project engineering arm's length" basis. He regards for many years with Cummins the U.S., to run the Deutz other. cagine business.

"A customer-oriented marketing concept" is how Schutz air-cooled engines ranging from describes the contribution he hopes to bring to Deutz, one of Germany's largest producers diesel engines. experience of selling in a highly competitive climate where the understand and satisfy customers' requirements is paramount. Schutz aims to strengthen Deutz's international sales and service network and

conversion (diesel machinery, engines and gas turbines); food production (tractors and farm a run independently of each

The diesel engine subsidiary has two distinct sides to itstruction machinery, vans and trucks, tractors and a variety Magirus-Deutz trucks, but this now forms part of IVECO, the With his of other industrial and marine applications, and the larger water-cooled engines, ranging from 272 to nearly 10,000 hp and used mainly for ship propulsion and power generation.

> Last year Deutz produced 137,000 engines in Germany water-cooled engines. About 20-

to tors. Fahr combines and farm

While this business provides useful base load, Schutz em-Peter Schutz, who had worked and management)—which are Deutz as an independent diesel engine producer, similar to America's Detroit Diesel, which is a subsidiary of General Motors and supplies GM heavy trucks but operates as an autonomous company.

> KHD has a 20 per cent interest with the balance held by Fiat; Schutz deals with IVECO "just like any other customer."

On the technical side, Peter Schutz envisages for the next to enlarge its share of world and another 23,000 through few years a steady improvement markets—not surprisingly the licensees; less than 2 per cent in engine performance. He U.S. is at the top of his list of total production consists of points to the replacement of the 411 engine with the 511, with The parent company, 25 per cent of the German air- an increase in power per cylin-Klockher - Humbold; Deutz, cooled engine production is der from 14 to 171 hp; similar divides its business into three used "captively" in Deutz trac- gains have been made in the 913 (power per cylinder raised from 20 to 26 hp) and the 413F (from 28) to 32 hp). The same process is taking place on the

> Schutz is looking for steady improvements in turbo-charging. combustion and the reduction of noise, as well as design modifications to make the engine

water-cooled engines.

But it is in marketing that Schutz sees the biggest scope for changes. Adopting what he calls "a very customer-oriented marketing strategy." he wants his dealers to be able to supply their OEM customers within a matter of two or three days at most. These customers are trying to cope with shorter lead times (they want to respond more quickly to their customers' needs) and at the same time they want to keep their engine stocks as low as pos-sible. Dealers are supplied with 'stub" or basic engines which can be fitted rapidly into the

Advantage

"Our air-cooled engine gives us an advantage," says Schutz, "It's a complete package—the nearest that an internal conbustion engine can get to ar electric motor.

Like most other European and Japanese manufacturers, Deutz sees the biggest growth poten-tial in the U.S. Deutz engines have been sold

in America for more than 20 years—there are over 120,000 Deutz engines in operation there—but it is only in the last few years, with the growing recognition in America of the superior fuel economy of the diesel engine, that the business has begun to move sharply ahead. Five years ago, Deutz was selling less than 2,000 engines

a year in the U.S. In 1978 the figure was about 16,000 and this year Schutz expects 20,000 units. The main outlets are small construction machines, backhoes, air compressors and similar equipment; irrigation, too, has been a particularly important market for Deutz. The company likes to claim that it makes the only "heavy duty" engine below 150 hp; where durability and long life is required Deutz believes it often has the edge on the competition. But the growth in business has come mainly from markets which previously used petrol engines, not from displacing

competitive diesel engines.
At this stage, Schutz is plan-ning to tackle the American automotive market in a limited way. Domestic manufacturers such as Cummins, Detroit Diesel and Caterpillar dominate the supply of engines to the heavy truck market, but there should be scope for the smaller Dentz truck market, where the engines in the van and light operator is looking for a 15-20year life for his vehicle, "We have decided to build

engines in the U.S.," says Peter CONTINUED ON NEXT PAGE

challenge

quarters of Saab-Scania at dustrial and marine engine Sodertalje in Sweden is a rough manufacture. Last year, 5,800 and hilly stretch of woodland.

Intrigued visitors who have been promised a look at a lorry been promised a look at a lorry strength of the control of the c test area, find difficulty spotting cent going for export. any suitable-looking track. They

boulder strewn slopes, the —and Scania shares the general toughest of which has a 60 per expectation, while bemoaning cent incline that would be the lack of thoroughly reliable impossible for a man to climb statistics, a common complaint unaided.

climb, if not with ease, then at 85 per cent of Scania vehicles least with a striking show of are delivered to customers power. Finally, hearts really abroad. do ascend to mouths, as the 111's driver insists on going down the 60 per cent hill—a test of the multiple braking systems unwary.

the company's commitment to land, Iraq and Tanzania diesel truck manufacture. Scania arrived in Brazi the backbone of Scania's diesel range: the eight, 11 and 14-litre units. Most of those sold are now turbo-charged.

Scania, the largest part of the Saab-Scania group which also in-cludes car and aircraft production plus medical and military equipment, sold 20,700 commercial vehicles last year. That total was made up of 18,800 trucks and 1,900 buses.

A MILE or so from the head- keen to stress at present, is in-

So the proportion of "non capare shepherded to a long bench tive" use engines to total diesel seat at the back of a hefty SBA engine output is a quarter, in 111 truck, and suspicion line with general industry exincreases as seat belts are perience. Engine-makers worldpointed out.

Then the lorry chugs off into altering quickly in non-captive the heart of the woodland—and the lorry chugs off into altering quickly in non-captive engines' favour—a 50-50 mix in attacks a series of ferocious, five years is mentioned by some

To return to the staple truck The 111, with all-wheel drive, operations, Scaola puts the total differential locks, and a twisting number of its truck chassis body frame, completes the steep variations at about 150. About

There are seven production as well as the narves of the centres in Sweden—11,500 of the total 18,500 Scania work-It is a convincing demon- force are in the home countrystration of what can be achieved and there are manufacturing division. taking so much of by the most rugged of Scania's plants in Brazil and Argentina diesel output, has been a notable truck range, and it underscores and assembly acilities in Holsuccess area for the company.

Scania arrived in Brazil as Three basic engine sizes form early as 1953, and the company's position there has grown to one. of dominance. Brazil is its lar-gest single market, the company producing over 4,000 trucks and buses annually, and the share of the local heavy track market has risen above 40 per cent.

The Dutch operation, based at Zwolle, 100 km east of Amsterdam, assembled 4,700 trucks in 1977. The Argentine plant, at Tucuman in the north-west of An increasingly important the country, opened in the side of the company's activities, spring of 1976 and output last and one that Scania officials are year was 450 trucks.

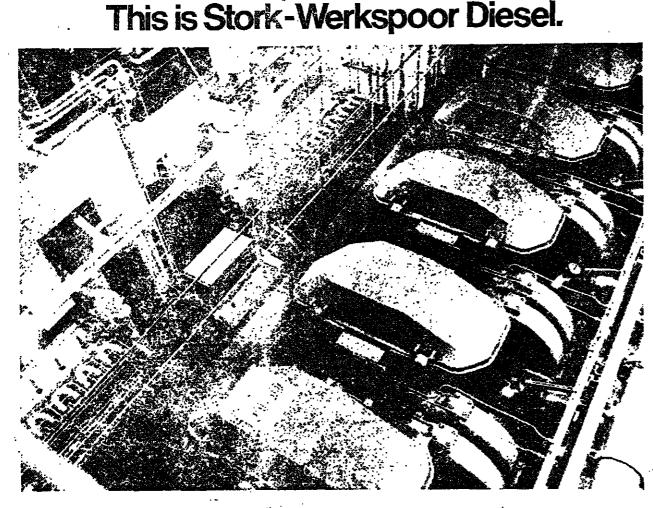
draught from powerful-An can competitors in Europe a whole is on the question price. Scania naturally argue that reliability and fuel econor give it an edge over an engh whole working life. Strict can ponent standardisation has been introduced to aid the former on the latter, Scania official claim that their engines overall consumption advantage rises in high as 20 per cent against settle competitors at the lowest point of the fuel consumption currently of the II like

Those who do puzzie through the statistical information avail able are bullish about the diese! engine's prospects. However, Seeb-Scania has yet to carry its 40 years' experience of diese engine manufacture into a range for passenger cars—this despite the major successes scored by diesel cars from rival manufacturers around the world. Saes Scania neither produces a dieselengined car nor makes power units for other manufacturers diesel cars.

But its important truck Overall, pre-tax earnings sales for the first half of 1978 improved 6 per cent (to the equivalent of \$1.27bn, respectively), profit margins widening satisfy-ingly. The truck division did a lot better than other parts of the group, registering a 19 per cent sales gain in the six months.

The target for the entire company for the 12 months was for a 10 per cent profit and sales rise, which should mean trook. turnover ahead a quarter over

- Nicholas Owen



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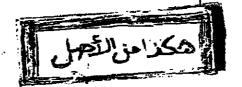
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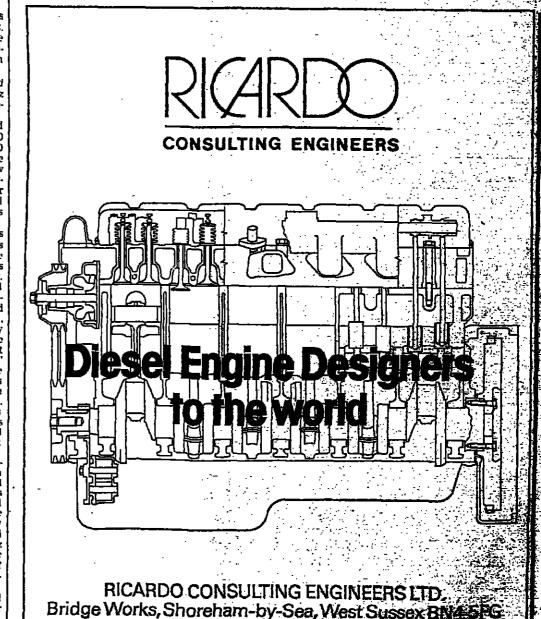
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Few bright spots in Japan

suffered recently from low engines for passenger cars, demand from agriculture and. The Japanese diesel industry to continue for some time. The companies most of which daily bright spots have been in specialise and have carved out supplying construction equip strong positions in the various ment—where demand has been specialised markets for diesel boosted through massive doses engines of public works specialize and faminar Diesel based in

demand from agriculture and. The Japanese diesel industry shiphullding which is expected is dominated by a handful of

PROFILE, KIRLOSKAR

Spreading its net

lead from the traditional home tion which is far above that other industrial and marine achieved by the principal Euro applications; these engines are pean producers; only Lombar identical in design with the dini in Italy comes near to American built Cummins matching them. But will the engines Japanese be able to retain their head? Is it possible that the mass production of small diesel engines will shift to developing countries, as is already happening in some other branches of

Of course both Yanmar and Kubota have the advantage of a large internal requirement for diesel engines in their own tractors and construction equipment Besides it would be wrong to regard even the small diesel engine as a low-technology product. But it is interesting that duct. But it is interesting that diesel engines represent one of the few branches of mechanical engineering where India has achieved a significant share of world production. India's production of engines is probably tuning between 400,000 and souther mines a year about the 500,000 units a year, about the same as Italy and well altead of France; only Japan, the UN West Germany and the U.S. are in front

There is a nuge domestic demand for diesel engines in India, especially for irrigation pumps and generator sets, but in other fields Indian manufacable to make use of this home base to develop a substantial export business. Here, however,

company in the group, was incorporated in 1926 and began with the manufacture of plausius. As the industrialisation of India gathered pace, the Kirloskary branched out into the manufacture of dissellengines, electric motors, machine tools, pumps and valves reactors and a number of other products. Most of these involved the establishment and other electrical equipment, and Bharat Forge, which makes heavy-duty crankshafts for engine manufacturers in India

and abroad.

Kinloskar Oil Engines, incorporated in Poons in 1946, was multiple first Indian company to

THERE IS no doubt that in engines in water-cooled and airparts of the diesel engine indus-cooled versions. It currently try, especially in the lower produces 57 models in the horse power ranges, aspenses 340-hp range for industrial, manufacturers have stolen the agricultural and marine applications, and employs over 3,000. of the diesel engine, Western Another company in the group, Europe. The two leading Jap Kirloskar Cummins, was set up anese companies in the up to in 1980 to make heavy-duty 30hp category, Yanmar and engines in the 60-1,600-hp range Kubota, have an annual product for construction equipment and

> Producing some 100,000 diesel engines a year, Kirloskar ranks as one of the world's largest manufacturers of small engines. Like other Indian engineering companies, Kirloskar has exported its engines in considerable numbers to other developing countries, both directly in the form of loose engines and indirectly as part of such equipment as pump-ing sets. But in recent years

the company has taken steps to strengthen its market position in the developed markets or Western Europe and North



export below of India's largest one of India's largest sector industrial groups. Kirloskar, has in the last few Peter W. Schule, years become a force to be reckoned with in the world the Board of Management diesel engine industry.

Kirloskar Brothers, the first of Kloeckner-Humboldt management in the group, was Deutz in April, 1978, with responsibility for engines of turbines. Born in the state of turbines. and turbines. Born in Berlin, Schutz took a degree in mechanical engineering at Illinois Institute of Technology and began his career as an engineering trainee with Caterpillar.
After working as a project
engineer in the development of Caterpillar's truck these involved the establishment of separate specialist engineer in the developcompanies. Thus the group ment of Caterpillar's truck now includes Mysore Kirloskar, diesel engines he joined oproducers in India, Kirloskar as director of technical makes electric motors, transplanning. In 1971 he was formers, variable-speed drives appointed vice-president and other electrical equipment, with morldwide responwith worldwide responsibility for product planning and in the following year he became vicemarketing

Export

CONTINUED FROM PREVIOUS PAGE

Schutz. "When and where has shipbuilding. There have been still to be settled." He points out that this year's sales volume in America will be not far short and other industrial application and other industrial applications. Deutz, whose range includes an economical basis for cludes the 628 range producing lical production.

"We won't be making engines in the U.S. because of the dollar."

BeutscheMark exchange rate or well." according to Schutz. A number of orders has been cheaper there, but because we can bath them cheaper there, but because we won't for power stations, drilling can service our customers rigs and other industrial uses. Better," he says Apart from Having maintained production existing and potential American fairly constant in the last year customers, a good many Euro or so, Schutz is now looking for pean manufacturers who use Deutz engines in their equipment are now selling or intend. ment are now selling or intend different business from the ing to sell in the U.S.

Manufacture.

Manufacture in the U.S. is as ogical for Deutz as it was for Volkswagen, and perhaps even more necessary for marketing seasons. Like Volkswagen, Dentz has developed the market progressively over a number of years and the product is now well accepted. For reasons of speed, the company may acquire an existing American factory rather than build on a greenfield site.

With the larger water cooled engines, Schutz ares a different set of problems. Here all the leading manufacturers have been hard hit by the slump in

engines, which are almost all sold to OEM customers for incorporation in their own equipment. Although there is some transfer of basic knowbetween the businesses, they are run as distinct profit centres...

Covering such a wide horsepower range from 3 to nearly
10,000 hp, Deutz is in an excellent position to profit from the
expected growth in worldwide
usage of diesel engines. But the biggest opportunity—and the biggest test of Schutz's marketing strategy—will be in the U.S.

THE MANUFACTURERS of the motor industry, which is Osaka is the largest maker of culture, partly because the machines with diesels will be diesel engines in Japan have just beginning to push diesel diesel engines in terms of makers of such machinery over- down by 10 per cent, while numbers, but concentrates on the smaller engines for use in construction equipment, agriculture and for marine use.

Kubota of Kyoto holds the dominant share in the now depressed agricultural machinery market (70 per cent of the Japanese land-use diesel engines are for agriculture, with about 15 per cent used in construction and 15 per cent going to On the marine engine side, the largest of engines are made by the huge shipbuilders like Mit-

the huge shipbuilders like Mit-subishi Heavy Industries, Kawa-saki and Ishikawajima-Harima Heavy Industries. Leading the industry for medium size marine engines for use in cargo ships and fishing vessels is Niigata Engineering.

makers have seen production this year drop sharply. Figures compiled for January to October show production of diesel engines nationwide fell by 18.7 per cent from the similar period last year to 501,258 units (petrol engines during the same period gained 4.9 per cent to 2.616,424 engines), while value fell 9.1 per cent to Y82.7bn (about

In the previous year, the number of engines built paratively small segment of reached a peak of 715.544, up 7 per cent from 1976. The value in 1977 had been up 8.3 per cent to a high of Y112.92bn, according to the Internal Computation Manufacturars' Associated by Y1 18hn, while sales gained to Y1 18hn, while sales gained bustion Manufacturers' Associa-

The biggest drag on the diesel

produced last year and found marine related sales remain flat. themselves with large inven-

The industry has also been hurt by Government initiatives this year and next to cut back on the production of rice in Japan. Farmers, who are subsidised by Government-supported rice prices, enthusiastically boosted Japan's rice crop this year to record levels, creating problems of warehousing the rice. Demand for tractors, combines and planters will be down as a result of less planting. Makers are hoping to boost ex-ports to South East Asia and elsewhere. (Tractor sales to the U.S. are good, and China is

In 1979, it is expected that agricultural machinery sales will fall another 15 per cent in value. Kubota, which holds i about 40 per cent of the market penerators, Fuji Diesel, a subcontractor to Niigata and Toyo Sha, and Noda Sangyo and Iseki which build agricultural machinery.

The land-use diesel makers have out as a market.)

In 1979, it is expected that agricultural machinery sales will fall another 15 per cent in value. Kubota, which holds i about 40 per cent of the market penerators, Fuji Diesel, a subcontractor to Niigata and Toyo Sha, and Noda Sangyo and Iseki which build agricultural machinery.

The land-use diesel makers have a market.)

Equipment

sales drop of 0.3 per cent to y232.519bn while net profit fell about 1.5 per cent to y9.29bn. The only sector in Kubota's diesel engine facilities doing relatively well was construction equipment, which inago but which remains a comparatively small segment of overall business.

net profit drop of 30 per cent to Y1.16bn, while sales gained 11 per cent to Y161.150bn. The company expects that this year

Construction equipment sales are up by 25 per cent.

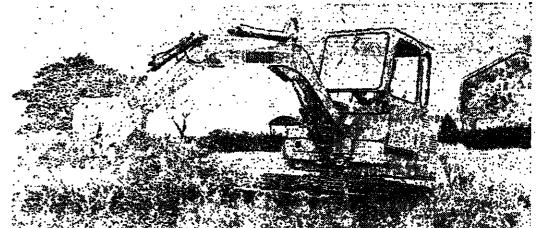
Exports of land use engines (20 per cent of them diesel) were up about 23 per cent in the first seven months of 1978, but the industry is being told to avoid excessive increases in exports by the Minister of International Trade and Industry (MITI), which fears that a fast pick-up in engine exports to compensate for sluggishness at home could in the long run lead to further protectionist moves in other nations.

imported diesel engines remains limited. Imports accounted for only 0.22 per cent of all the engines bought in Japan in 1977, down from 0.37 per cent in 1976 (in value terms the figures for imports are higher). The U.S. in 1977 exported 2,296 diesel engine products to Japan, valued at Y2.3bn, down from 4,685 units valued at Y2.42bn in 1976; the UK sold 2,065 diesel units in 1976 (Y1.074bn), down from 3.289 (Y1.442bn) in 1976; West Germany, which exports mostly large-scale engines, has done better, expanding sales in Japan to 1,507 units for Y1.5bn in 1977 from 1,263 units worth Y696m in 1976.

The Japanese market for

Production of marine use diesel engines peaked in 1977. with orders now expected to downward as the worldwide depression in shipbuilding deepens. In Japan, demand for diesel engines for fishing vessels has also slipped as a result of the 200 mile fishing limits now in force in many countries, which has prompted fishing fleet cutbacks.

In the first six months of 1978, there were 7.3bn horse industry domestically was agri- sales of agricultural related down 8.5 per cent from a year



Kubota is one of Japan's largest producers of small diesel engines, which are used in its own tractors and construction equipment and for out side sale. Sales of Kubota's small ride-on tractors aimed at parks, sports grounds and similar applications are running at over 10,000 units a year in the U.S. and the market in Western Europe is also being developed. The picture above

shows the Kubota KH10D, said to be the smallest 360-degree tracked excavator available in the UK. It is powered by an 18 horse power three-cylinder diesel engine. Other major manufacturers of small diesel engines include Yanmar, the biggest manufacturer, and Iseki. Japan is by far the largest producer of this type of engine.

ago; tonnage was down 27.2 per ger cars are beginning to soar Y131.9bn. Domestically, the process of cutting back 35 per cent of capacity, with the big-gest yards reducing by around

Niigata Engineering, in the half year to September, 1978 saw sales drop 10 per cent to Y66.8bn, while net profit gained slight 1.7 per cent to Its production of helow the 1972 half year historical peak of 460 engines with 340.000 hp in total.

cent to 87,508 tons and the because of their fuel economy, value dropped 24.1 per cent to and improvements are being made in noise and vibration. shipbuilding industry is in the Japan lags behind West Germany in the use of diesel engines in passenger cars but expects to catch up. In 1977, only 6.2 per cent of all Japanese cars were diesel compared with 3.7 per cent in West Germany, but two years earlier in Japan

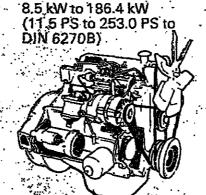
there were virtually none. Not counting imports, mostly from Volkswagen, diesel engine marine diesel engines in the car sales in the first 11 months September half year totalled 340 of 1978 totalled 38,806 units, up units for 302,000 hp. well about 47 per cent from an already impressive 26.436 units in 1977. In 1975 there were only 1,100 units and in 1976 fewer

Nissan Motor is the largest maker of diesel cars, with three introduced in 1975. Toyota now has a diesel car and Isuzu, which makes large trucks with diesel engines, also entered the market

in 1977 awakening to the fact that in Japan the cost of operating a diesel car is about a third of that of a petrol-engine car. The major motor companies expect that they will reach the level of Mercedes-Benz — over 40 per cent-in the number of diesel cars produced compared with petrol-driven cars over the next few years.

Richard C. Hanson

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PROFILE - CUMMINS

Plan to launch new series

CUMMINS, THE largest independent diesel engine manution of its existing families of facturer, is nearing the point engine and developing new of decision on the sourcing of markets for them. a major new range of engines aimed initially at European truck manufacturers. It will be a 10-litre in-line engine in the 230-320 hp range designed to serve what Cummins describes as "the large volume, heavy-duty European truck market." This is the lower end of a market already served by Cummins' NH series of 14-litre in-line engines used by such manufacturers as Leyland, Ford, ERF, Foden and Seddon-Atkinson in trucks of 32 tonnes gross vehicle weight (GVW) and above. Below this size, but still in the neavy-duty category. there is a requirement for smaller in-line engines of a size and specification which the NH series is not quite able to match.

Most engines in this category are at present made in-house by the European truck manufacturers themselves. One of the keys to the success of the new project will be Cummins' ability to convince the truck makers that it makes more sense to buy their engines from an outside independent sup-plier. The argument—which is at the heart of the company's position in the automotive mar-ket—is that the independent supplier, selling to a number of different end-users and specialising in the engine busi-ness, is better able than the truck manufacturers to meet new requirements and to invest in advanced technology.

Clearly Cummins could emhark on the new engine range with greater confidence if it secured an advance commitment from a substantial truck manufacturer to buy it. There 1981. has been speculation in the industry that Leyland Vehicles, the BL truck and bus sub-sidiary, might fulfil this role it already offers Cummins NH engines in its top-of-the-line Marathon truck—but Leyland is only one of several potential customers for the new engine-Leyland is a substantial engine manufacturer in its own right, both for use in its own vehicles and for outside sale.

When and where the new engines will be manufactured has yet to be decided, but the expectation is that production some new OEM (original equip-will begin in the early 1980s. ment manufacturers) deals are Meanwhile Cummins is pressing possible in the near future.

Cummins. is of course, an international company and the largest part of its business is still in the U.S. It supplies over 40 per cent of the diesel engines used in heavy-duty trucks; all the big truck makers, including General Motors, are among its customers. Cummins's biggest engine plant in Columbus, Indiana, is currently manu-facturing about 450 NH engines a day. Both with the NH and with its other engine families Cummins is an important supplier to non-automotive supplier markets. including construction, industrial and agricultural equipment, mining machinery, generating sets and marine applications.

Cummins has been manufacturing in Europe since 1956. The plant at Shotts, in Scotland was established to supply NH engines to Cummins' customers who were developing their European manufacturing operations. An important customer in the early years was the Euclid earthmoving equipment plant in Scotland; it is now Terex, owned by General Motors and mainly using engines made by Detroit Diesel, the GM subsidiary.

But Shotts' most important cus-tomers now are the truck manufacturers; about 60 per cent of Shotts' business is automotive. Coles Cranes, Atlas Copco, CompAir, Ingersoll-Rand and Clark. A big expansion is under way at Shotts, which will double made by Perkins, there is an its manufacturing capacity by important difference in the way

Exclusive

UK-based truck manufacturers have been important customers for Shotts, but Cummins made an important break-through in the Continental market when Ford chose the NH engine as the exclusive power unit for its new Transcontinen-tal truck assembled in Amsterdam. Cummins is in continuous discussions with a number of Continental manufacturers and some new OEM (original equip-

Above the NH, Cummins has the K family of engines which go up to 1.600 hp and are used mainly in heavy construction equipment and large generator sets. The family includes the KV12 and KV16 which are manufactured only at Daventry; last year this factory, which was acquired by Cummins in late 1972, produced about 800 engines. More than half of Daventry's output is exported. Important OEM customers in the UK are the generator-set manufacturers, including Dale, Petbow, Industrial Engines and

Dawson Keith. Britain is also Cummins' sole worldwide source for the Small Vee engines, produced at Darlington at the rate of about 100 a day. These compact engines, covering the 150-240 hp range. have a wide variety of automotive and non-automotive appli-cations. About 90 per cent of Darlington's production is ex-

An important customer in Britain is Ford, which uses the Small Vee engines as an option in its 16/24 and 28-tonne trucks. In the U.S. Ford has recently started offering the Dar-lington-built VT-225, a 225 hp engine, in its 8000-L series trucks, marking an important breakthrough for Cummins in the medium-duty section of the

US. truck market. With an annual production worldwide of some 150,000 engines and engine kits Cum-Apart from the truck makers.
Cummins also supplies NH mins has steadily built up its engines to construction equipment manufacturers such as producer of high-quality engines incorporating advanced technoincorporating advanced technology. Although its Small Vee Columbus, Indian engines compete against engines the two companies approach the Charleston, S. Ca engine business. Whereas Cummins would not expect to Jamestown, NY produce any one family of engines at a rate of more than Darlington, Engla say, around 500 a day, Perkins Daventry, England looking for volumes of Shetts, Scotland

around 1,000 a day. One of the



Mr. Joseph Patrick, vice-president UK and Europe, Cummins Engine

of a market normally supplied by It is quite a different proposi-Perkins-type engines and what tion from the engine which response to such a shift, if it Cummins' U.S. rival. Detroit

discussed at the beginning of tonne GVW range. this article. That engine would

Plant

big questions for the future is of Cummins' business; the how far the kind of technology desired production rate would associated with Cummins will probably be in the region of move downwards into the sector 300 a day, or 60-70,000 a year. takes place, Cummins should Diesel Allison. is planning to make.

This is a separate issue from 8-litre, 4-stroke, V8 engine the new 10-litre in-line series designed for trucks in the 7-12 to the first of the firs

With this engine Detroit be very much in the mainstream Diesel is aiming to capitalise

on the expected switch from petrol to diesel fuel in the Class 5 and Class 6 sectors of the U.S. market — a market which is attracting considerable interest from European truck manufacturers. Cummins must naturally be considering how it could participate in this new market, but it seems unlikely that it could contemplate a major entry into this business without an assured high-volume customer; Detroit Diesel has of course, such a captive customer within General Motors.

Danger :

Cummins must also be conscious of the danger of spreading itself too thin over too wide horse-power range. In the past few years the top management has made a firm decision to con-centrate on the diesel engine business. A number of diversification ventures were sold off and the clear policy is to build on the company's reputation as a producer of high-quality engines, widening the market both geographically and in the company of applications. A move the down market a stack a "down market" to attack a new big-volume business would only make sense if the engines required by that market were in line with Cummins' estab-lished design and manufacturing philosophy.

G.0.

	CUMMINS' M	AIN ENGINE I	PLANTS
	Model	HP range	Applications
na	NH V-903 V-12	230-450 240-500 525-800	Trucks, industrial, marine Trucks, industrial, marine Generator sets, and mining
arolina	K6 NH	450-600 230-450	Trucks, industrial, marine Trucks, industrial, marine
	NH	230-450	Trucks, industrial, marine
and	Small Vee	150-240	Trucks, buses, industrial, mari
nd	KV12, KV16	230-450 800-1,600	Trucks, industrial, marine Generator sets, industrial, mark

PROFILE - CATERPILLAR

Preparing for attack European market

CATERPILLAR IS the world's largest manufacturer of earthmoving machinery; according to some estimates it has about half the market outside the Soviet Bloc and China. Ils ability to expand its market share in North America is obviously limited by antitrust considera-tions, although its dominance of the industry has never been challenged by the antifrust authorities. More important, the growth in demand for construction equipment over the next few years is likely to be steady rather than dramatic. Partly for these reasons, Caterpillar has been devoting a large part of its capital investment in the past lew years to the diesel engine business. It is already an established supplier of engines to the heavy truck makers in the U.S.: it has a strong position in marine and industrial markets. and in power generation. Cater-pillar is now determined to win a similar market position in

Europe.
Caterpillar produced its first diesel-powered crawler tractor in 1931. Even in those early days it supplied engines to other original equipment manufac-turers and for irrigation purposes. During the 1950s new versions of Caterpillar engines were designed for marine applications and for generating sets; a separate engine division was created. In the past decade there has been a determined effort to upgrade the importance within the company of non-captive engine sales, with new manufacturing facilities, new engine designs and new marketing arrangements.

Doubled

Illinois, which is the only source of Caterpillar engines for machines other than the com-pany's own equipment, has been doubled in size. Recently a new site has been acquired at Lafayette, Indiana, which is helieved to be destined either for diesel engines or for diesel engine components. Caterpillar's total commitment to diesel engines between 1974 and 1978 is thought to have been nearly

After some years of developing engines specifically for auto-motive applications Caterpillar achieved a breakthrough in 1969 when its 1100 series of basic families of diesel engine 8-cylinder diesels was chosen by in 221 different configurations. Ford to power all its mid-range Apart from the truck market the diesel trucks. This was followed by the 3100 series and later the 3200 series. Caterpillar now supplies engines to most of the leading U.S. heavy truck producers, including General department of the marine market, notably fishing boats: the expansion of several countries fishing



The South Shields pilot boat powered by a Caterpillar Marine Engine

Mack and White. More than 25 per cent of Caterpillar's design and engineering budget is spent For the past decade Caterpillar's engine sales have been

growing appreciably faster than the rest of its business. In 1977

sales of diesel engines and related parts (excluding the engines used in Caterpillar's The Mossville engine plant in \$771m, representing about 13 linois, which is the only source per cent of the company's total sales of \$5.8bn. The base volume provided by the company's inhouse requirements, together with its heavy investment in advanced machine tools and automated equipment, should make Caterpillar one of the low-cost disease organize assemblers in the cost diesel engine suppliers in its size range. There has been speculation that the company might one day decide to enter the truck market directly, but it seems more likely that Caterpillar, like Cummins, will see better growth prospects as an independent engine supplier.

Caterpillar now offers five basic families of diesel engine company is a major supplier of

Caterpillar has always been known for praduct quality and for service support through strong, well-financed dealers. The aim is to extend this reputation to diesel engine purchasers for whom reliability and service are the primary requirements but who may never have dealt with Caterpillar before.

In Europe Caterpillar has done well in the marine busi-ness, particularly in Holland and Norway, and it has supplied more engines for North Sea applications than any other manufacturer. But the company is now preparing itself for a more determined attack on other sectors of the European market, particularly the automotive business.

A new engine-marketing division has been created at the Geneva headquarters of Cater-pillar Overseas (which looks after Africa and the Middle East as well as Europe) and this group is working closely with Motors, International Harvester, sion of several countries fishing Caterpillar dealers to develop

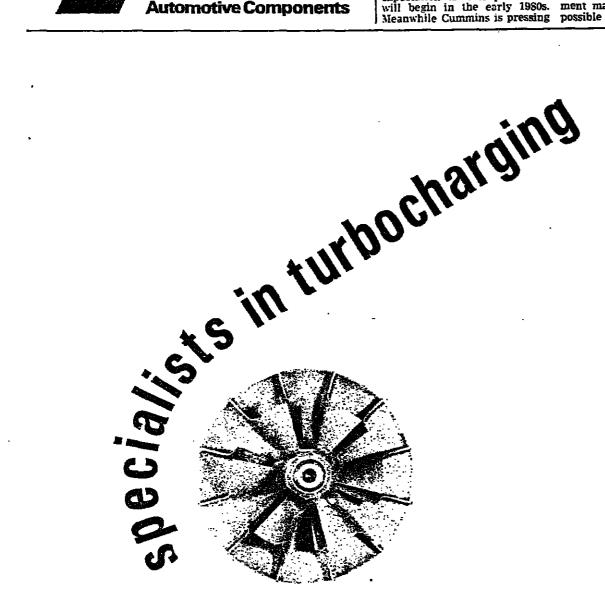
fleets as a result of the extension of territorial fishing limits to 200 miles has brought a useful hook. Unlike some other engines hook. Unlike some other engines. Larger OEM accounts are handled direct by Caterpillar designs and builds its own generating sets which it sells under its own brand name.

In the earthmoving industry Caterpillar has niways been new business. Most dealers, like Leverton in the UK, have formed a separate sales team for engines. Larger OEM accounts are handled direct by Caterpillar Overseas in Geneva; these include Aveling Barford, which fits Cat engines in some of its under its own brand name. off-highway dump trucks.

Clearly the volume market for the kind of engines Cater-pillar makes is the truck indusiry, but here the company is up against established European competition-most of the Eurocompetition—most of the European truck companies make their own diesel engines—and against an American rivel. Cummins, which has been manufacturing engines in Europe for a good many years. Although Caterpillar does make engines in Europe (Glasgow is one such location), these are for use in the company's own European-built equipment and they could not be adapted to supply the European truck industry.

Caterpillar may eventually

Caterpillar may eventually need to set up its own manufac-turing plant in Europe for noncaptive engines, but the first step is to find the customer who will provide the launching platform into the volume market— the role played by Ford in the U.S. 10 years ago.



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PROFILE—GEC DIESELS

Traditional emphasis on quality

director of GEC, has a very to the companies, but very little small head office at Stanliope. Gate in London and pushes as possible untities for rationalisation and authority, as possible down to the men who run the operating groups. What is not specified. Each of the four to principle of decentralisation is Newton-le-Willows, Dorman in followed not less, rigorousing Stafford, Paxman in Colchester within the groups themselves. Since the the management of the operating director of GEC. Diesels, is essentially a co-ordinator of six highly autonomous companies at the top end and one in the U.S. Each of the other end of the same four in the U.S. Each of the other end of the source four designing, selling and the two to be companies and powerl manch to pool ideas and Powerl manch to go on size and powerl manch authority as possible to except meaning the three main engine types produced by Ruston; key companies that the four companies had a sizeable export organisation, but he has some until the three main engine types produced by Ruston; key companies the four companies the chercan the four companies on the three export organisation, but he has rejected it on the group. There is a single export organisation, but he has rejected it on the group on the three establishment of a single export organisation, but he has rejected it on the four companies the three stablishment of a single export organisation, but he proves the establishment of a single export organisation. The number of distinct engine by Ruston; the four the management for designing, selling and makes about 5,000 a year. (By making its products. The only contrast. Perkins making central department is marketing engines for tractors, trucks and and this is very much a staff other high-volume applications, function—advising on the makes some 230,000 a year in appointment of distributors and the UK.

At the other end of the horsepower range, the two Mirrless Blackstone companies

among manufacturers of medium-speed marine engines—

the largest share of the market

is held by Pielstick and its

licensees and they have all sought to expand their business

in stationary applications, for

Mirriees has for some years

achieved substantial sales for

part of a contract secured by another company within the

group, Hawker Siddeley Power Engineering

power generation.

panies. It is hard enough to get himself, advised by Dr. R. V.

sary, with the lower end of the Ruston range and the top end builders (Kelvin) or manufacturers of heavy earthmoving of the Dorman range. GEC turers of heavy earthmoving into the GEC after the merger equipment (Dorman)—it lasts into the GEC after the merger with English Electric in 1968. A the companies, though they are not compelled to buy inhouse. when there are two competing good deal of reorganisation was engines in the group Powell necessary in the early years, but

Group's move to expand share

The chief engineers at the cannot afford to knock one of by 1972, when the group was EVERYONE KNOWS that Sir monitoring their performance. There is virtually no scope

The chief engineers at the cannot afford to knock one of by 1972, when the group was them out too precipitately; it beginning to earn satisfactory them out too precipitately; it beginning to earn satisfactory director of GEC, has a very to the companies, but very little ponents between the four commonth to pool ideas and Powell has to be allowed to fade away. Profits, the decision was taken the companies of the c On the selling side Powell has to expand internationally. The

But the presence of a French awareness of the French market among the UK companies and more business on the Continent

DORMAN BAUDOUIN

Ruston: an important proviso was that any bid should be agreed. Finally, GEC settled on Baudouin in Marseilles, a wellestablished supplier of engines for marine and other applications. The integration of Baudouin into GEC Diesels has been a gradual operation—the Dorman Q engine is now being manufactured in Marseilles— and the acquisition has not had a dramatic impact on the level of GEC engine sales in France. manufacturing company within the group has increased the

and service organisation. In the has been won.
U.S. Witte Corporation of In the US,
Kansas, a manufacturer and panies were In the US, too, several companies were looked at before Alco, a subsidary of White Motor, was bought in January. 1977. This company is best named Lister Diesels Inc. known for its rail traction In 1975, Hawker Siddeley engines, but it also supplies the acquired a 37 per cent interest in Onan Corporation, which has engines a year, it is comparble in design and manufacturing philosophy to Ruston. GEC has used the Alco

organisation to support the sale of Dorman engines in the U.S. The plan is that major designdevelopment work for new engines aimed at Alco/Ruston markets will be undertaken in the UK, with joint production in both factories. Cracking the U.S. market is not easy, but out a local manufacturing company the task would be almost impossible. The standards of service which customers in the service which customers of discovering the methods of discoverin Powell is convinced that withtribution and the training of motive market-one of its dealers — these are matters engines is being offered as an which can only be learned by option by ERF—and this is which can only be learned by direct experience of the market. clearly a sector which, though Acquisition of Alco has crowded, offers scope for ex-

GEC DIESELS Horsepower

400-5,000

Main applications Marine propulsion, power generation. Marine propulsion, power generation, rail traction. Small boat propulsion

Power generation, marine pro-pulsion, industrial equipment. Marine, industrial. Rail traction, marine, industrial.

Abous 34 per cent of GEC Diesels' production goes to marine applications, 54 per cent for power generation and industrial applications, 12 per cent for rail traction.



Mr. David Powell, Managing Director, GEC Diesels

enabled GEC Diesels to get its pansion. But for the present American operation moving much faster than would have been possible on the basis of direct exports from Britain. Other acquisitions are pos-

GEC is content to build slowly on Dorman's established experience as a supplier of vehicles. "We are not going into the truck market in a bigbang fashion," says Powell. In the diesel engine business. where mutual trust between customer and supplier takes a long time to establish, new markets are not won in a hurry.

Сотралу: Mirrices Blackstone (Stockport) Mirriees Blackstone (Stamford)

Siddeley.

industrial Marine, power generation, industrial Marine, power generation Marine, industrial, power generation Automotive, industrial,

decided to forego their investment in modern machine

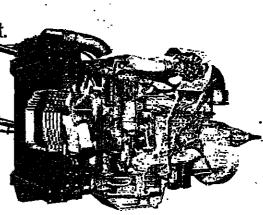
trade magazine, Diesel nationally, too, Gardner should Engineering entitled "End of an era?" The editorial pointed out that Gardner, "though in the marine field. As with other engine manu-

ofference noower

The power of a diesel engine really depends on the organisation behind it. Power means the know-how and the reputation of the manufacturer. Power means professional OEM installation by the supplier.

Power also means first class service back-up and the availability of spare

But most important of all, power means reliability.



DAFDiese continuous oower

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of the world market AS PART of its diversification . Both companies design and away from zerospace, Hawker manufacture equipment incor-Siddeley built up a substantial porating their own diesel stake in diesel engine manu engines. In addition to facture: With the aerospace generating sets, Petters has interests now removed by built up a sizeable business in nationalisation, the importance transport refrigeration units for of the diesel engine business for road, rail and sea applications. Hawker Siddeley has become The two companies supply even greater: the existing sub-engines to a wide range of sidiaries in this field are being OEM customers, particularly expanded and further acquisi- in construction equipment: tions, especially outside the Thwaites, the manufacturer of UK are obviously a possibility, small dumpers, is one

PROFILE HAWKER SIDDELEY

The purchase of the Brush important customer for Lister Group in 1957 brought with it Petters, one of the country's At the other end of the largest producers of the country's the other end of the largest producers. largest producers of small engines below 50 horse power. Mirrless Blackstone companies and Mirrless, a leading producer of large medium-speed engines for marine and industrial applications.

خازنا الثا

United Pints

With the same

In 1965. Hawker Siddeley acquired R. A. Lister which included two diesel engine producers - Lister itself. making small engines but covering a wider horsepower range than Petters, and Blackstone, which made engines comparable to those of Mirrices.

In 1977, the group made its the Middle East and other move into the highly competitive automotive market by buy recent order was for 38-eighting L. Gardner, the specialist engine producer, which thought a spart of a \$22m electrification as part of a \$22m electrification selience in Oman; the order was with a very distinct image, is in direct competition with such companies as Cummins, Leyland and Rolls-Royce Motors.

range of diesel engines in its and generating sets have been portfolio. Like-GEC, the parent affected by recent political and group gives each company a financial problems in Nigeria, high degree of autonomy; they Iraq and Iran, but this is are run as separate businesses regarded as a temporary and compete with each other in certain markets. Lister and remain a growth market. The Petters, for example, both make world is short of electrical their own generating sets which their own generating sets which are sold in competition.

Although Mirries and lished in this field, like Blackstone were merged after Mirries Blackstone, are well-the 1965 acquisition of placed to take advantage of it. Lister, they have recently Overcapacity among pro-been separated out as ducers of large marine engines Mirrless Blackstone (Stockport) is likely to persist for several and Mirrless Blackstone years. There is some concern (Stamford) and sampany has

power and those diesel engine manufacturers who are estab-

Stamford); each company has among Britain's private sector. Manchester, which includes a distinct product range and medium-speed engine producers recently modernised aluminium each is responsible for that the future policies of designing making and selling British Shipbuilders could make their own engines.

The structure is some content and engine works at Eccles, near Manchester, which includes a recently modernised aluminium foundry, the approach to engine manufacture is more akin to a their own engines. Similarly. Gardner has is that British Shipbuilders may automated methods not many retained its autonomy within seek to bring work to its own associated with the motor industries that Hawker Siddeley Group All engine subsidiaries by taking try. The final stages of assentive companies, benefit from the licences from foreign medium bling the engine are entrusted overseas. Co-ordinating role speed engine producers, thus to an individual craftsman who overseas co-ordinating role speed engine producers, thus to an individual craftsman who overseas Co-ordinating role speed engine producers, thus to an individual craits and played by Hawker Siddeley depriving companies like has personal responsibility for International.

Mirrless Blackstone and Ruston, the quality of the product.

In competitive terms, both part of GEC Diesels, of poten. Hawker Siddely is most unlikely to make drastic changes.

HAWKER SIDDELEY'S U.K. DIESEL ENGINE COMPANIES Application: Marine, power generation,

HP range: 1,500-11,000

tation for quality which is second to none. Their strength

is based on two crucial factors. both of which greatly affect the operator's pocket, namely, a consistently low specific fuel consumption, coupled with

proven durability."

The current range of Gardner

engines, making extensive use

of aluminium alloy, is a recognisable descendant of the com-

engines produced in the 1930s Partly through the influence of

the Gardner family the comhas consistently put

quality ahead of volume. While this policy has involved an almost deliberate loss of market share, truck and bus operators

who have remained faithful to

Gardner are often willing to put

up with long waiting periods rather than switch to an alter-native supplier, the re-sale value of Gardner engines is

extraordinarily high.
Within the Barton Hall engine works at Eccles, near

nany's first autor

ралу

rival, Rolls Royce Motors, and capacity is about 6,000 engines there was some surprise in the a year. There may well be greater industry when the directors

independence and join Hawker tools, particularly in the early stages of machining, without The announcement of the deal undermining the Gardner tradiprompted an editorial in the tions of craftsmanship. Inter-Diesel nationally, too, Gardner should

criticised occasionally for having conservative engine designs, has maintained a repufacturers. Hawker Siddeley's ability to expand its share of the world market depends in large part on the strength of its sales

acquired in 1974; it handles Lister products and has been re-named Lister Diesels Inc.

distributor of diesel engines, was

a sales and livensing agreement with Petters. Apart from its production of petrol and diesel engines. Onan is one of the lead-ing U.S. manufacturers of generating sets, with a marketing network which should prove of great value to Hawker

On the Continent, Lister last year established a new subsidiary in Germany. One of the main objectives is to sell engines to original equipment manufac-turers, especially in the pumping and construction equipment German manufacturers that by using Lister engines, backed by its worldwide service network, they are more likely to secure

International In

Mecedes Benz has played a major part in developing the diesel for cars. In 1935 the 260D (left) was the first-ever standard production diesel saloon and (right) is the 300D, which is the first car to be fitted with a five-cylinder diesel engine

pean and Japanese manufacengines, engine components and products incorporating diesel engines. for diesel While demand engines in the U.S. seems cer-tain to grow considerably faster in the next decade than it has in the past, rates of growth will vary from one sector of the market to another. The pros-

engine as well as the financial risk of a large-scale commitment to the U.S. There is the further uncertainty about the impact of Federal regulations on the industry.

At the risk of over-simplification, there appears to be a choice between five broad strategies, though they are not mutually exclusive. These are:

1. The establishment of manu-

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subsidiary which is Europe's largest manufacturer of diesel engines, acquired a factory in Canton, Ohio, from White Motor. Production of diesel engines at this facility is run-ning at about 22,000 engine units a year and the intention increase the output to 100,000 engines a year by the early 1980s. Current customers already have close connections for the Canton-built engines

wholly-owned sales company in the U.S.

4. The negotiation of supply arrangements with an American original equipment manufac-

turer (OEM), who will instal

in his equipment engines shipped from Japan or Europe.

5. The sale in the U.S. of

liesel-powered equipment made

Local manufacture
 Perkins, the Massey-Ferguson

in Europe or Japan.

many, has decided to manufacture engines in the U.S. in the or manufacture those foreignnear future, though the loca- designed engines that seem most tion and timing have yet to be suited for the American market. announced. Deutz expects to sell some 20,000 German-built one of the leading diesel engine engines in the U.S. this year builders in the UK. bought Alco but it needs a local manufac-from White Motor in 1977. More

Expanded

Among component manufacturers Robert Bosch of Germany, one of the two leading producers of fuel injection equipment, built its first American factory at Charleston, South Carolina in 1973. This plant will be expanded step-hy-step in line with demands from the original equipment manufacturers. An important customer for Bosch will be Volkswagen, which will be manufacturing its diesel version of the Golf in the U.S. later this year. Other customers include John Deere, Mack and Detroit Diesel, the General

Bosch's great rival in the fuel injection business. Lucas Industries of the UK, announced in 1977 that its CAV subsidiary would begin assembling fitel injection pumps at a new factory at Greenville, South Carolina. Lucas was already supplying some U.S. engine builders and Perkins is also an important customer for the

about the U.S. venture Lucas duces its own engines with an said the facilities in Greenville output range of 125-510 hp, will

for U.S. engine builders seeking type approval for products in the face of tightening environ-Lombardini, the mental controls." A warehouse would also be built to "ensure continuity of supply American customers both for pumps produced on site and for other CAV diesel fuel injection components supplied from out-side the U.S. The new facility will also provide a base for

marketing CAV products in North America. By establishing manufacturing operations on American soil. CAV expects to be become an even more acceptable component supplier to U.S. diesel engine builders."

A quicker route into the market, especially for a company whose products are not well known and which does not with particular customers, is the acquisition of an established include Massey-Ferguson itself the acquisition of an established and a number of other OEMs. company. It provides a ready One of Perkins' main made marketing organisation
European rivals, Deutz of Gerand manufacturing facilities General Electric Company.

turing base in order to forge than 11,000 Alco engines are in closer links with its American service and the company's present production rate is about 150-200 engines a year although best known for its rail traction engines. Alco also supplies the marine, offhighway, power generation and other industrial markets. Ownership of Alco gives GEC Diesels direct experience of marketing techniques customer requirements in the U.S. and provides vital support as the company seeks to develop sales of its British engines.

Hawker Sidderey, whose diesel engine interests include Petter, Lister Mirrlees Blackstone and Gardner, has two manufacturing interests in the U.S. In 1974 it bought Witte Corporation of Kansas, a manu-facturer and distributor of engines, which now handles the Lister range of products. In the following year Hawker Siddeley bought a 37 per cent interest in Onan Corporation which has a sales and license agreement with

Last year MWM of Mannheim, one of the leading European diesel engine producers, acquired Murphy Diesel of In making the announcement Milwaukee. Murphy, which proleading

Italian producer of small diesel engines, has set up its own subcompany sidiary company based at Doraville, Georgia, which will establish a sales and distribution network throughout the country. The company will stock engines and parts and "factory-trained personnel will be available for applications engineering and service training support." Lombardini also has its own subsidiaries in Germany, France, Spain and

Singapore.
MTU (Motoren-und Turbinen
Union Friedrichshafen), a leadestablished its own sales sub-sidiary at Houston, Texas. "The diesel engines

marketing and service base."

Kirloskar, the Indian company, has set up its own com-pany in Baltimore, Maryland, and is developing a nation-wide sales and service organisation to support its range of 5-107 bp models. 4. Supply arrangements

. Whether through exports or through local manu-facture, the key to success in large volume producer of partially manufactured in the diessel-powered equipment. US. This is the thinking There is some anxiety in Europe behind the purchase by MAN of that Japan may saive a large to be saive a large. ing German producer of engines in the 400-7,000 hp category, has proportion of this business, Motor, one of the smaller U.S. especially in the automotive

been reports that Ford is discussing with Toyo Kegyo and Isuzu the possible supply of diesel engines from Japan.

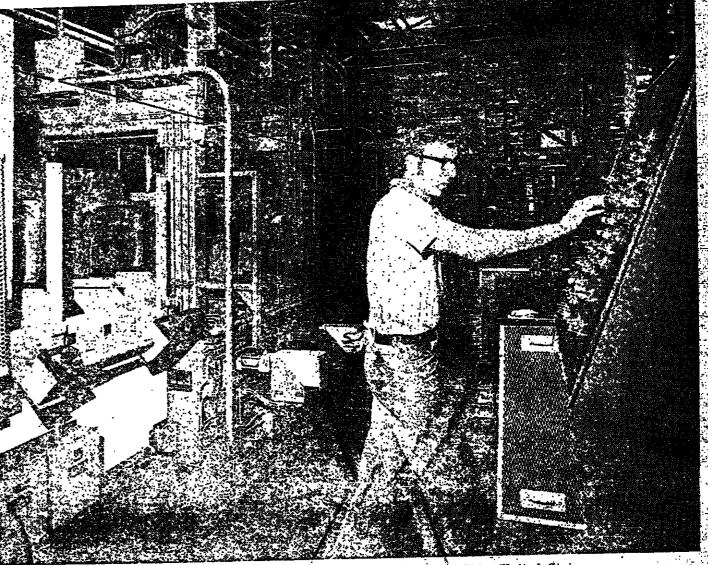
Daimler-Benz are exporting diesel-powered trucks to the Some other European truck makers believe that the scope for direct exports of the U.S. diesel market is the fully built-up trucks is limited OEM business—negotiating and that it will be necessary supply arrangements with a for the vehicles to be wholly or lead to the manufacture of a German-designed truck, incor-

the Mack brand name. A similar approach is being followed by diesel engines from Japan.

diesel engines from Japan.

Supply of original equiponent suppliers. For example, Iseki, one of the largest Japanese ment. Renault Industrial one of the largest Japanese Vehicles. Iveco, Volvo and producers of tractors, has signed a long-term agreement with White whereby Japanese-built small tractors will be sold through White's network of

farm machinery dealers. Whatever marketing channels are used, sales of imported equipment incorporating diesel engines are certain to grow. This will bring opportunities for the engine suppliers and make it more necessary for them to have their own plants in the



Engine production at the Perkins' factory in Canton, Ohio, United States

Americans expect a compromise

DIESEL IS rapidly attaining the U.S., largely because the fuel saving qualities of the diesel engine have given it an important role in the future plans of the Detroit motor industry. Although the Government's exhaust emission regulations seem to present a barrier to the widespread use of diesel engines in passenger cars of the 1980s. the car companies are going ahead on the assumption that a

compromise will be reached.

the growth will come from trucks as well as cars. The class diesel engines so that more than dicting that diesel trucks will

And not just the car com- 85 per cent of this category is take 15 per cent of the class six status of a "buzz word" in the panies. Major European com- now diesel-driven. But the ponent suppliers such as West diesel engine is new rapidly Germany's Robert Bosch and trickling down into the medium Britain's Lucas Industries are duty category of classes six and setting up assembly operations seven. In the first nine months in the U.S. in the hope of a rapidly expanding market for fuel injection equipment. But compared with 58.3 per cent in 1977, while in the larger class six segment penetration is eight heavy duty market for climbing from last year's 8 per trucks of over 33,000 lb has cent to more than 11 per cent. increasingly been dependent on International Harvester is pre-

market by 1980, 23 per cent by 1982 and 35 per cent by 1985, or approximately 70,000 out of a total market of 200,000 units. Lured by this prospect of a steadily growing market a number of European companies, Iveco, Mercedes-Benz, Volvo, Renault and MAN are preparing major sales drives to market their products in the U.S. But the U.S. companies, some of which have been late in seeing the potential for diesel in class six, are now moving swiftly to catch up. Of greatest potential here is the new plant which General Motors' Detroit Diesel

Allison subsidiary is building to

produce up to 75,000 units a year of a new 8.2 litre diesel engine designed specifically for

the medium duty market. With the marketing power of GM behind it, this unit will be seen not only in GM trucks but also those of other manufacturers and it is possible that its availability could quicken the anticipated rate of diesel growth in the medium duty market. But gains already scored by the diesel indicate that it will match in 1978 the great strides of the past two years. Of the total 3.44m factory sales of trucks in the U.S. in 1977 some 185,297 or 5.4 per cent were equipped with diesel engines, which was 43 per cent more than in 1976 which, in turn, was up 26 per

Virtually all of the sales were in the medium and heavy duty truck segments and most experts agree that the main impetus to equip light vans and trucks with diesel engines will flow from the effort to develop diesel engines for passenger Although a number of European companies, notably Mercedes-Benz and Volkswagen. have been offering the diesel option for several years the

U.S. factory sales of trucks with diesel engines. 105,714 113,152 1971 143,089 1972 168.389 167,259 1974 102.508 1975 129,076 185,297 Source: Automotive News

1978 Market Data Book.

MARKET SHARE OF LEADING U.S. MANUFACTURERS OF DIESEL ENGINES FOR TRUCKS

Source: Cum	mine En	oines		
Others	0.9%	1.9%	2.7%	2.8%
Caterpillar	8.5%	13.9%	11.3%	11.1%
Nack	15.6%	22.4%	17.3%	16.3%
Detroit Diesel Allison	34.9%	24.7%	19.4%	22.6%
Cummius			49.3%	
	1974	1975	1976	1977

offers significant help in meet-

in 1985, and GM's president,

Elliot M. Estes, predicted only a few weeks ago that fully 25 to

30 per cent of his company's pas-

senger cars will be equipped

with diesel engines by then. Mr. Estes argues that diesels are

essential if the large six-passen-

the rule setting a 1.0 gram oxide

for 1981. Quite simply neither

manufacturer will have to show

the rule and the Environmental

is by no means assured and the

economy.

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breakthrough into U.S. pro- industry may well have to lobby duced cars occurred last year Congress for relief. In the when GM offered a diesel with meantime, there are reliable some of its Oldsmobile models. reports that GM is pressing Having sold 33,826 dieselahead with plans to produce at powered Oldsmobiles in the least two and possibly four new 1978 model year ending in diesel engines within the next-September GM has scheduled production of 190,000 diesel-apparently include a 5-litre V8 engined units for the 1979 at Chevrolet in 1981 and a 38model year which will be inlitre V6 at Buick for 1982 At stalled not only in Oldsmobile the same time GM is said to be models but also in Cadillacs. The also considering designs for a company is anxious to establish 4.1-litre diesel V8 from Cadillae and a 1.8-litre four-cylinder a market for diesel-powered and a 1.8-litre four-cars as quickly as it can for diesel from Chevrolet.

He is no brazen bester bister bister

their lower fuel consumption These would supplement the Oldsmobile output which is ing the Government's fuel requirements which demand that the fleet cars sold by each GM's only current source of light duty diesels-5.7-litre V8 and a 4.3-litre V8. Both of these car manufacturer conforms with are adaptations of gasoline a steadily rising scale of fuel engines but the 5-litre Chevrolet conomy.

is said to be a brand new design which will be installed on the to the gallon rising to 27.5 mpg division's 1981 pick-up trucks.

But these interesting and important developments in private cars should not be allowed to obscure the fact that in unit terms the so-called industrial market is still the larger. Here the diesel engine of 50 hp and upwards is the workhorse in industries as ger U.S. car is to survive, but at the moment the extensive use of diverse as agriculture and mining. Hard data on the market are much more difficult diesel power is threatened by of nitrogen emission standard one of the world's leading manu GM nor anybody else has been facturers of diesel plant, estiable to design an engine able to mates that in 1976 the industrial meet that standard and it looks market for diesel engines totalled around 389,000 units certain that Detroit will be petitioning for a waiver allow-ing a standard of 1.5 grams of which divided as generator sets 19,000, agriculture, 216,000 off highway weblicles 117,000, stationar NOX for up to four years. The that there is no health risk resulting from a relaxation of power 31,000 and marin is said to have s modest growth with of highway Protection Agency has issued and marine sales rising by about 5 per cent and agriculture guidelines on the health data required which the industry regards as extremely stiff. remaining static A relaxation of the standards

John Wyles

Components and suppliers

"YOU DO what you are best at ... The degree of vertical integra- same component would clearly has to balance the advantage of elsewhere. So, too, can the excess of the internal require and leave it to me to do what tion varies considerably from be uneconomic—not only being close to the customer, and Japanese component makers; ments of any one of its major and leave it to me to do what tion varies considerably from I'm best at." This is the argu- one engine company to another. ment which the diesel engine one engine company to another, ment which the diesel engine Some have their own foundries producer puts to, say, the and torges. Others buy-in virmanufacturer of trucks of con- hally all their castings and struction equipment; designing, forgings and even sub-contract developing and making diesel some of their machining work. engines is a complicated and Bought-in components probably expensive business which the represent at least 50 per cent end-equipment manufacturer, of the value of most diesel unless he is operating on an engines; in some cases the pro-

exceptionally large volume, portion may go as high as 70 per exceptionally large volume, portion may go as high as 70 per should leave to the specialist, cent.

Exactly the same argument is The choice of suppliers and put to the diesel engine mann, the monitoring of their perfacturer by the specialised come formance are crucial elements ponent suppliers: "Don't make in the engine manufacturer's in-house what can be more ecconstrategy. Like Marks and Spennomically purchased outside." eer in the textile and clothing Companies which make pistons, industries, the high-volume collinder liners, coolers fuel engine manufacturer works very cylinder liners; coolers, fuel engine manufacturer works very injection equipment, turbo-closely with his key suppliers. chargers and a variety of other He will try to provide them with proprietary, or semi-proprietary a forecast of likely offtake over items provide the essential infra- a 3-5 year period and this will

engine manufacturers have a basis as possible for his own choice between making in-house investment decisions. At the and buying out; the balance of same time there will be a conadvantage is kept under regular tinuous dialogue between the advantage is kept under regular innuous dialogue between the review But in most cases the engineering staffs of the two technology concerned is sufficiently specialised, and the and technology are kept up to amount of investment so sub-the mark stantial, that it makes sense for The engine manufacturer the engine manufacturer to rely does not like to be too on an outside supplier who can dependent on a single supplier. spread the investment over a yet to spread his favours among much larger volume of sales a number of producers of the

structure on which the diesel be reviewed in detail at least engine industry depends. once a year; the aim is to give With some of these items the the component maker as firm a

a yet to spread his favours among In free markets like the U.S. wide range of customers within a number of producers of the the component manufacturer Europe, in North America and

because it leads to a fragmentaof the cost and engineering time involved in approving and checking for the engine manufacturer is

to split the business roughly 75 per cent/25 per cent between two major suppliers. would be the preferred source for a particular engine range, the buyer has the option of altering the volumes in the event of a serious industrial relations problem at one or other company, or unexpected quality deficiencies. An important factor in the choice of supplier is his ability to provide worldwide service

back-up. The component makers have to follow the manufacturer as he moves into new overseas terriproviding service support and in some cases building manufacturing facilities of their own. This certainly applies in a country like Brazil, where Government restrictions virtually prohibit component imports; the component maker has to establish or acquire his own factories if he wishes to participate in the growth of the diesel industry

each

hence establish local assembly one tion of volume but also because against the economies of scale provided by the home manufacsupplier's turing base. A number of UKproduct. A comfortable position based component producers have been able to supply the U.S. market by direct exports from the UK; some of them have a cost and quality advantage over domestic American suppliers. Perkins, now manufacturing engines at its plant in Canton, Ohio, has found it more economic to source many of its components with its established

British suppliers than to switch to American companies; the British suppliers, of course, have the advantage of the much larger volume of components supplied to Perkins' Peter-borough factory. As U.S. demand for diesel engines grows, no doubt there will be a tendency for more European component companies

to set up their own factories in the U.S., as Bosch and Lucas-CAV, the two leading suppliers of fuel injection equipment, have already done. But the principle of worldwide component sourcing is well established in this industry. The specialised component manufacturer. operating from a British or Continental base, can build up a

interesting example of customers. and manufacturing facilities, global collaboration is the supply of forgings and other components by Komatsu, the big Japanese maker of earthmoving equipment, for the Cummins K" range of engines.

British industry is generally regarded as efficient and well-organised, providing a reliable service to the engine manufacturer. One major UK-based engine manufacturer reckons to source no more than 10-15 per cent of his of the U.S. in 1976 and, with its component requirements from own plant in the U.S., is well outside the UK and most of placed to take advantage of the those are highly specialised growing U.S. demand for diesel

An area which has been a cause of concern to the diesel engine manufacturer in recent years has been the supply of certain castings, particularly cylinder blocks and heads. There have been problems both availability and quality. German foundries, others, have been used to fill the gap, although the rise of the D-mark has made their prices less competitive. Recent investment and modernisation Group) describes its role by UK foundries supported by Techniques like centrifugal Government aid schemes, have improved the situation. The major suppliers, notably Birmid major suppliers, notably Birmid mitted to the business and have Qualcast and the foundry divibuilt up the manufacturing sion of BL, are now better able expertise over many years. to meet the diesel engine Sheepbridge Stokes has successful to meet the diesel engine Sheepbridge Stokes has successfully developed a large direct export business for cylinder stokes has successfully in the U.S. foundry interests.

engine manufacturers is GKN; Don works of British Steel expertise. Corporation.

Many big engineering comthe ability to meet at least part motive Products, Locker Airof their crankshaft requirements internally. But the scale advan-tages of the independent crankshaft producer, and his ability Engineering or TRW—these are to invest in the new techno- among the other components logies, generally lead the engine maker to source most of his requirements outside. Thus in the U.S. companies like Caterpillar and John Deere buy crankshafts from an independent supplier, Wyman Gordon; the new facility which this company has recently built at Danville. Illinois, has a capacity well in

Similarly, the engine makers can make their own camshafts and some of them do so, but the same arguments of scale and technology have enabled a ngines. British company Weyburn components Engineering, to build up a rally regarded strong worldwide position as an independent camshaft supplier; Weyburn claims to supply over 30 per cent of the Western world's requirements. Weyburn was acquired by Carborundum

Liners

"The engine manufacturer wants a sophisticated component at the heart of his engine which will be 100 per cent free of trouble—we are the specialists who can provide that com-ponent." This is how the major UK supplier of cylinder liners, Sheepbridge Stokes (part of the casting are best handled by companies which are wholly com-

The other big UK producer of On the forging side the cylinder liners is Wellworthy, biggest supplier of forged crank-part of Associated Engineering shafts to the British diesel The same two groups, Sheepbridge and AE, are also major it supplies the major part of suppliers of pistons and piston Perkins' requirements, for rings. In most of these fields example. Suppliers of crank- there is a strong competition shafts for the larger sizes of from Continental companies, in engine include Mitchell Shackleton (part of the Mitchell Somers Karl Schmidt are highly group), Laystall, and the River regarded for their technical

Cooling equipment from Serck or Covrad (Associated panies have their own forge and Engineering), filters from Auto-Maze or Vokes, bearings from Glacier Metal or Vandervell, valves from Farnborough which are normally bought by the engine manufacturer from outside suppliers. Two important items which have a special importance for the diesel engine industry are turbochargers and fuel injection

G.O.

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Fuel injection pumps

AT THE heart of the diesel tion—apart from the engine makers like to avoid a long in Poland. Romania and Yugo-engine is the fuel injection builders who make their own supply line for vital com-slavia and associate companies pump, which supplies fuel to fuel-injection systems - comes the combustion chamber at ugu the combustion chamber at ugu the combustion chamber at ugu the Stanadyne. The latter company right moment in each work supplies fuel-injection equipoyele. Some diesel engine ment to OEMs, John Deere, was a supplied of the supplies of the supplied of the s injection equipment "in-house," normally because the equipment is intrinsic to the main body of the engine and could not economically be manufactured by an outside supplier. Both Cummins and Caterpillar make their own fuel injection equipment ...

But most builders of high-speed diesel engines buy from one of the two main suppliers of tuel injection equipment. Bosch and Lucas-CAV, or one of their licensees. It is normal for both these suppliers to be used on high-volume engines and new customers. In August and there is fierce rivalry 1977 the company announced used on high-volume engines: between them

Robert Bosch in Germany was the pioneer in this field. He developed fuel injection systems for diesel engines during the 1920s and volume production began in 1927 at the equipment of 32 per cent, with developed. for by companies manufacturing under licence from Bosch.

Licences

From the early years Bosch recognised that it would not be able to supply all markets from Germany and so a number of licences were negotiated. One of these, signed in 1931, was and at that time Bosch held a service in the U.S. springheid, Massachusetts, to are considerably increased by an associate company in Spain, make fuel injection equipment setting up there. U.S. engine Condiesel. There are licensees for the American market (There) for the American market. (This company, taken over during World War II and now an independent company trading under the name AMBAC Industries, remains a major supplier of fuel injection equipment and continues to use the Bosch

In 1938 Bosch signed an agreement with a group of Japanese businessmen to form Diesel Kiki, now Japan's major producer of fuel injection equipment for diesel engines. Since the war another Bosch

licensee in Japan, Nippondenso, has begun production. In India an associate company, MICO, was set up in 1951 and this enterprise makes fuel injection equipment and other com-ponents both for the Indian market and for export. In 1956 production of Bosch fuel injection equipment began in Brazil. Meanwhile, Bosch has continued to strengthen its position in Europe, with subsidiary and associate companies expanding production in France, Spain and Austria. Bosch returned to the

at its new American plant, is one obvious customer for fuelinjection equipment, but clearly Bosch expects to obtain a sub-Like the European makers of two problems which makers of replacing castings previously and commercial vehicles.

turers of fuel-injection equip- growing in popularity.
ment will be siming to make Most diesel engine customer base in Europe to outside suppliers. In high-speed expand their sales in the U.S. diesels of the automotive type The main domestic competi- the biggest European supplier increase Garrett's ability to

General Motors in the dieselpowered version of the Olds-

Bosch's main European rival, Lucas CAV, has followed a similar strategy in the U.S. It was inevitable that as Perkins and other established customers sought to strengthen their position in the huge U.S. mar-ket, Lucas would need a production base to demonstrate its presence on the scene and to forse closer links with existing plans for production of Dra Lucas equipment is fitted oners rotary pumps at a new factory Lucas equipment is fitted oners in Greenville, South Carolina, an additional bonus because it with an initial investment of means about £50 per engine £3m Production was to start by more than its conventional components imported betrol equivalent." Feuerbach factory. Bosch now Medway in Kent and would claims a direct share in world gradually be expanded as the wide diesel fuel injection market for CAV products

of these engines are exported to the U.S. There are already with the Lucas subsidiary C. A. over 1m CAV mary pumps in Vandervell, now Lineas CAV, over 1m CAV mary pumps in

1934 a U.S. company, American tunities to collect a share of the Bosch, was established in 'diesel explosion' in the U.S. Springfield, Massachusetts, to are considerably increased by

tion to match our fuel injection and Japan. equipment to their engines and Another Lucas subsidiary in the UK, Bryce Berger, makes

as a matter of priority.'

The "diesel explosion" is of vital importance to Lucas because the diesel engine uses locomotive diesel power units more Lucas-built equipment, both in value and in weight, than the petrol engine it displaces. As Sir Bernard Scott, chairman of Lucas Industries, has explained: " Apart from the key opportunity for CAV in fuel injection systems, any switch from petrol to diesel makes a substantial difference to our fortunes since it involves the supply of heavier and more powerful electrical equipment.

An important customer for a third of the Western world's and light van diesel engines the new plant was the Perkins automotive-type diesels are engine factory in Canton, Ohio, fitted with CAV equipment but Lucas-CAV had been either by Lucas-CAV or by one supplying the European plants of its licensees. In addition to of U.S. owned vehicle companies a range of in-line pumps, for a number of years — John normally used in larger engines Deers. for example, makes and for special applications, the engines in France incorporating major product in the Lucas-CAV equipment — and many pump which is now in world production at the rate of over -im pumps a year.

per cent share in the com. At the time of the announce. UK are at Medway, in Kent, pany Later Lucas assumed full ment of the U.S. venture, Mr. Sudbury, in Suffolk, and control and the dependence on Tony Gill, now chairman of Finchley, in North London. Bosch know-how ceased. In Lucas-CAV, said: "Our opport CAV has a large share of the 1934 a U.S. company, American funities to collect a share of the The principal factories in the sidiary, Roto-Diesel, and it has

ponents. It takes close co-opera- in Brazil, Mexico, South Korea

to demonstrate our commitment fuel injection equipment above to meeting their requirements and below the range covered by the CAV branded products. Bryce pumps and injectors are used for industrial, marine and and the company specialises in developing fuel injection equipment for particular customer applications. Hartridge, another Industries Lucas manufactures test equipment for fuel injection systems.

Although there are other significant competitors, such as L'Orange in Germany, the main battle will continue to be between Lucas-CAV and Bosch, especially in the growing market passenger car diesels. A notable achievement for Lucas was the order from Volkswagen to supply fuel injection systems to the Golf dieselengined car at the rate of about 250 units a day, supplementing supplies from Bosch.

In Italy Lucas-CAV is supplying fuel injection equipment for Lucas-CAV claims that about the new range of passenger car being manufactured at Foggia in southern Italy by SOFIM. a consortium formed by Fiat, Alfa Romeo and Saviem (part of Renault Industrial Vehicles). For both Lucas and Bosch the

supply of fuel injection-systems for diesel engines is likely to remain a major growth area for a number of years. Clearly the market can accommodate both companies, as well as several smaller suppliers, but there will be pressure on all the companies in this field to develop more advanced systems, probably making greater use of electronic components and controls so as to enhance the efficiency of the diesel engine.

G.O.

Turbochargers

THE PRINCIPLE of using is Holset of Huddersfield. exhaust gases to boost engine. Although this company has power was applied to large been a subsidiary of Cummins marine and stationary engines. Engine since 1973, more than 80 as long ago as the 1920s. The per cent of its turbocharger leading supplier of large turbochargers for this type of engine usiness is with non-captive chargers for this type of engine engine manufacturers; its customers include virtually all the manufacturers in the field.

diesel engines now invading the diesel engines are trying hard bought from the U.S.

and there are a number of other major engine and heavy truck manufacturers in the field. Another major supplier is Schwitzer of the U.S. Within GEC there are two turbocharger manufacturers, Napier in the U.S. which supply other engine producers as well as GEC itself. In the past 20 or 30 years the turbocharging principle has been successfully applied to high-speed diesel engines used in trucks and in other industrial and marine applications. It is widely believed that the use of turbochargers will spread to the

U.S. market in 1973 when it began building a plant at smaller engines used in passenger cars and light vans.

The early years of this century the U.S. was by far the most important overseas market for Robert Bosch and the company is now aiming to the company is now aiming to the petrol- and diesel-engined cars at its new American plant is one obvious customer for fuel. and compact, if is usually \$2.7m foundry in Waterford, reckoned that for an increase freland, for the production of of about 5 per cent in weight aluminium impellers for use in Bosch expects to obtain a sub- turbocharging can give a turbochargers. Annual produc-stantial share of orders from 40.50 per cent increase in power. tion of impellers is expected to other U.S. manufacturers of other U.S. manufacturers of The turbocharger has the reach 15m by 1983 and output diesel-engined passenger cars further advantage of reducing of the Waterford foundry will and communicated publisher. replacing castings previously

U.S. market, such as Perkins of to overcome. Thus on both Last month Garrett announced the UK and Deutz of Germany, economic and environmental that it would be spending 89m the big European manufacture grounds the turbocharger is on a new plant in France to produce turbochargers for com-Most diesel engine suppliers mercial vehicles and small use of their long-established buy their turbochargers from passenger cars. This plant together with the expansion at Skelmersdale, will substantially

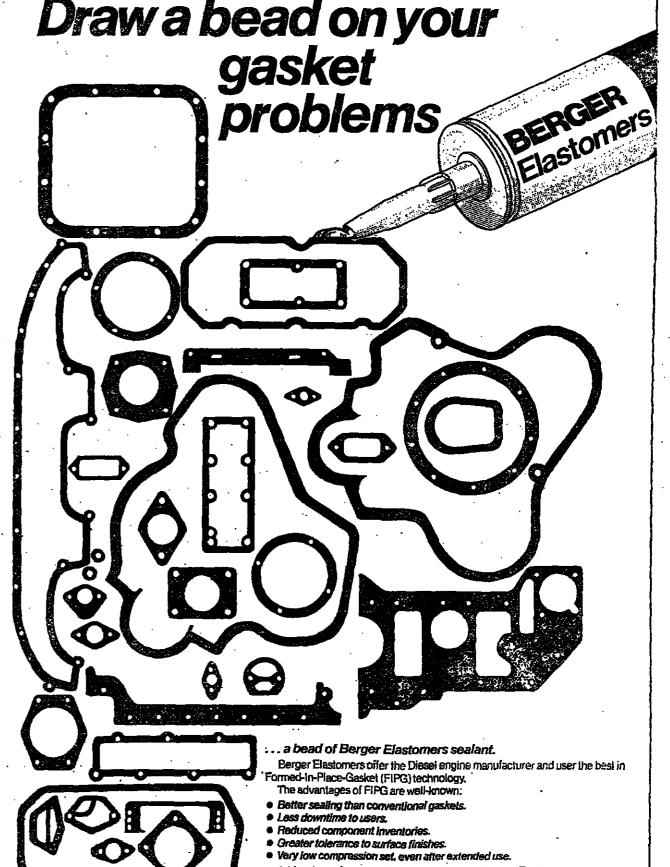
supply the growing European demand for diesel engine turbochargers.

Garrett is strongly committed to the development of small turbochargers for passenger cars. It is supplying the turbo-charger which is fitted to the Daimler-Benz 300SD car. claimed to be the first series production diesel car, which is aimed initially at the North American market, Daimler-Benz decided to equip the five-cylinder OM617 engine with a turbocharger because this represented the best compromise in terms of weight, bulk and production costs compared to a six-cylinder engine. The turbo-charged engine achieves an increase in performance of 43 per cent with only a 7 per cent increase in weight, compared to the naturally aspirated fivecylinder engine.

Daimler-Benz explained the choice of the Garrett AiResearch TA 0301 turbocharger as follows: "In contrast to the conventional large-turbine-housing turbochargers used on heavyduty diesel engines for acceptable boost pressures in the upper speed ranges, the small Garrett unit was chosen because of its fast response time and good boost characteristics throughout a much wider range of engine speeds."

If the popularity of diesel cars grows as rapidly as some forecasters expect, then the application of turbochargers to diesel engines will grow in parallel. At present about 10 per cent of all multi-cylinder diesel engines produced in Europe are fitted with turbochargers; this proportion is expected to grow to 20 per cent. possibly in as little as five years'

G.0.



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The scope for further development

THE DIESEL engine boasts a nomy, even the best only conlong and distinguished career as a power plant. Engines are in heat energy of the fuel into useuse covering the range from ful work. The remainder of the under 5 hp to 50,000 hp — a energy is lost to the atmo-much wider spread than that in sphere, either directly in the

It has attained this pre-eminence thanks to a low fuel consumption, which is superior to able interest in the use of in-that of its competitors in almost sulating materials, which may be all fields, and to a well-deserved reputation for reliability and the heat loss to the coolant. In durability attributable in part

ing levels of supercharging. The cent. increase in supercharging is likely to continue, involving a working cycle were used, howwider use of two-stage turbo- ever, the gain in economy at charging for the larger engines. high engine load would be much We are also likely to see a much greater—approaching 20 per wider use of turbocharging for cent. In such a cycle the exhaust Low-speed marine 8,000-40,000 small high-speed diesel engines. gas driven turbine and the and generating

Questions

Consideration of future trends in the technical development of the diesel engine and in the expansion of its markets raises number of important

1. What scope is there for further development of the diesel engine?

The high-speed, light duty category of diesel engines those used for passenger cars, taxis and delivery yans employ indirect injection combustion systems where the fuel is injected into part of the compressed air charge in a pre- or swirl chamber which separated from the remainder of the air charge by a small passage or throat. If direct injection, as used in most other dlesel engines, were possible it would give better cold starting, lower heat losses and an S per cent to 10 per cent improvement in fuel economy.

The problems of employing injection arise mainly from the wide speed range of such engines. These problems have proved intractable in the past, and while there is no guarantee that practical solutions will be found, a number of possible approaches are at and durability be maintained or combustion and/or by ignition present under study which could will developments in competitors timing retard, and by the use lead to the introduction of offset these advantages? Are or weak fuel/air

On the heavy duty truck and larger range employing direct respects? cessors may be necessary injection, while the engine has The competitors which the successful service operation.

any other type of prime mover. exhaust or indirectly via the

There is currently a considerceramic or metallic, to reduce to the absence of electric ing cycle, either naturally ignition. The specific power output of a high load factor, the gains in diesel engines has gradually in-creased over the years, both by increasing speed and by increas- could be of the order of 8 per

If an engine with a compound supercharging air compressor are both geared in with the engine so that any surplus power from the turbine, above that necessary to drive the compressor, is available as shaft power from the power unit

It is also possible to consider the addition of a Rankine bottoming cycle, either to a simple turbocharged engine or to a compound engine. Such a cycle is identical to that of a steam engine but employs an organic fluid rather than water as the working fluid. It takes in heat from the exhaust gas and turns a portion of it into useful

In this way a further improvement in efficiency is possible. giving a total gain of 30 per cent batteries charged during off-peak or so at high power, but at the periods. A breakthrough in expense of greatly increased battery technology is necessary complication, since an evapora- to give adequate range for most tor (boiler) is required together vehicle applications. with a feed pump, an expansion turbine or reciprocator to develop the power, and a con- highest powers in power generadenser to reject the waste heat, tion and marine applications. Since almost all the waste heat from the power plant is ejected radiator and the condenser, rather than in the exhaust gases. able amount of work is currently they tend to be very bulky and to require large cooling fans.

2. Will the present advantage of detonation by the use of high of fuel consumption, reliability, turbulence levels to speed up direct injection over the next new engines likely to arise strengths when approaching full five to 10 years.

The use of advantages in these or other engine sensors and micropro- of the so called wide-cut fuels

on essentially good fuel eco- diesel engine will have to face

HP range Engine type Small industrial

40-100 assenger çar, taxi

Truck, bus and 100-1,500

1.000-5:000 Locomotive and industrial Medium-speed 5,000-10,000 industrial and

over the period until the turn of

(a) In the smaller sizes and

especially in the small industrial

and passenger car field, further

development in the spark-ignited

petrol engine, including strati-fied charge engines in which the

fuel is not mixed uniformly with

the air charge in the cylinder

(d) Electric power generated from nuclear or fossil fuels in-

cluding vehicles operating with

(e) Steam turbines. Really

The most promising way of

increasing petrol engine fuel economy is by the use of higher

compression ratios. A consider-

going on in this area, which is

characterised by the prevention of detonation by the use of high

only in competition for the very

when combustion starts.

(c) Stirling engines.

(b) Gas Turbines.

FUTURE TRENDS

Trend over next 20 years Currently in widespread use except in U.S. Much wider use likely there, but first cost Currently widely used for taxi

and light van operation apart from U.S. To meet fuel economy legislation the diesel could capture up to 25 not harred by exhaust emissions legislation. Universally used now and will remain so.

Universally used now and will

remain so. Currently universally used apart from markets where low weight is important—eg, gas turbines on oil platforms. Usage pattern will continue. Diesel/steam turbine mix. Not likely to change. Diesels will have louger stroke and lower speed to take advantage of improved propeller efficiency.

showed a fuel consumption

improvement of 9 per cent over

the standard U.S. test cycle,

while Ricardo test data on a car prepared by the Swiss engineer Michael May, using

5.8:1 compression ratio showed

vided the necessary high octane petrol (97-98 RON) is available.

high compression ratio petrol

engines could approach current

light duty diesel engines in fuel economy in typical city opera-

Stratified charge engines occupy an intermediate position

between spark-ignited petrol engines and diesel engines.

Ignition is by means of a spark,

but the fuel/air charge is not uniformly mixed during com-

bustion. Many variants are possible, but while the fuel con-sumption of most of these is

not as good as that of a straight

diesel engine, there is an interest in the U.S. in employ-

ing the Ford Proco system in

the larger cars, and the late

injection types, such as the Texaco-TCCS and the MAN FM,

have abilities of running on

fuels with neither good octane

nor good cetane properties. These fuels which are typical

cessors may be necessary for which may be obtained more

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Major competitor High compression ratio petrol

High compression ratio petrol Stratified charge

Possible small use of gas turbines for luxury bus and coach, and Stirling engine for ow noise city bus Wider use of electrification on densely used railway lines. Wider use of electric power because of pressure on liquid fuel supplies.

Steam turbine if residual fuel quality becomes very bad.

in fuel economy can be quite current diesel fuels and striking. Data from Saab-Scania petrols, or may be obtained using 11:1 compression ratio from coal could be important

in the longer term. The use of gas turbines for a wider range of duties than seen in their current pre-eminence in civil aviation and in peak lopping and stand-by service in power generation has been fore-15 per cent improvement over cast for many years. Major the standard ECE cycle. Pro- problems still exist, however, problems still exist, however, and to compete with the diesel breakthroughs are engine.

> Efficiency. Temperature limitations of materials have restricted and still restrict the efficiency to below that of the

and first cost.

required in the following

diesel engine.

Durability. In order to

essential to use a regenerator or recuperator. These have given problems of durability but are now improved.

In the sizes of turbines of traction purposes, cooled turbine blades are not feasible, and currently available metals have limited the peak cycle temperature and furthermore very expensive. A breakthrough in the use of engineering ceramics could have an important influence in terms both of fuel economy

diesel engine-their very lownoise and low levels of emist he turbine rotors of furbo-sions of exhaust pollutants chargers are already very make them attractive, but they expensive and could ultimately also have a number of problem. also have a number of problem become scarce. There is, how-

or diesel engines. Their inherently high cycle efficiency

required:—

First cost and bulk. Current duce engineering ceramic alterengines tend to be expensive natives. Success in this area and bulky. Would eliminate a long-term. Control. Currently achieved risk to supply. by varying the mean cycle 5. In the last twenty years or pressure but requiring a so legislation has begun to have multi-stage high pressure an important impact on engine compressor. and involving design and development. What

Sealing. The working high Fuel economy regular.

(hydrogen or helium) at high Fuel economy regular.

pressure and temperature favour the diesel engine.

The easiest way of meeting level targets is larly demanding in its opera-

tional requirement. While both the gas turbine and the Stirling engine also have advantages in being able to a a wide range of fuels, the likely to limit their use in service to the 1990s, and only tive levels over the next 20 then if the requisite break throughs occur.

3. With increasing pressure on liquid fuel reserves, will fuel characteristics change in ways which will favour one or other Barrier type of prime mover? Apart from a possible lower-

ing in the cetane number of diesel fuel, which would give problems in the light duty diesel engine, a possible need to run on wider cut fuels towards the end of the century, and a gradual worsening in the quality of the residual fuels achieve any reasonable effici- which are burnt in the largest ency at part load it is diesel engines, changes in fuel quality in fuels derived from petroleum crude are not likely to have an important effect on

interest for vehicle and rail of methanol become available, fire in the U.S., however, and traction purposes, cooled manufactured from natural gas, the legislative limit of 0.2 or ethanol from the fermentation of vegetable matter, they for 1983 model year cars would would be much better burnt in prove difficult for the smaller a spark-ignition engine than a: diesel cars such as the Volkshence the efficiency and are diesel engine, as their low cetane numbers lead to major combustion difficulties.

4. Will pressure on mineral resources lead to shortages of certain strategic metals which could limit either the technical

longer history than either petrol engine or its scale of produc-or diesel engines. Their tion?

inherently high cycle efficiency The high alloy materials—close to and ultimately which are used for the preposibly exceeding that of the combustion chambers of indirect injection diesel engines and for areas where breakthroughs are ever, a considerable effort already being expended to pro-

multi-stage high pressure an important impact on expensions, and involving design and development. What inefficiencies with rapid loads effect will current or future cycling.

Sealing. The working fluid engine and its markets?

(hydrogen or helium) at high. Fuel economy legislation will

very low noise level targets is system over a long period. very low noise level targets is
High temperature/high by cocooning the engine in
pressure materials. The hot sound-insulating material or by end " of the engine is particu- placing the engine in an acoustic tunnel. Either way a considerable reduction in noise is possible, but at the expense of weight, bulk, cost, and ease of access for maintenance. The engine structure may also be modified to reduce noise levels, need for further development is, but the available reductions in

noise levels are lower. Legislainsuperable targets for the diesel engine.

Exhaust emission levels however, and especially exhaust particulates, could prove a mos difficult barrier for the diesel engine, particularly in the U.S. The small industrial engine market in the U.S. and the passenger car market worldwide could provide very large future markets for the diesel engine. In the U.S. a market penetration of up to 25 per cent for passenger cars has been talked about. Diesel engine ut are now improved.

engine type or operation in the exhaust particulate levels of High temperature materials.

next 10 to 20 years.

some 20 times those of petrol Should appreciable quantities - engines are coming under heavy g/mile which has been proposed wagen Golf, and probably impossible for the heavier cars such as the Oldsmobile.

These levels are being justified not only from the standpoint of posible health effects but also of air quality. Even

be harmless, the effect on the "quality of life" emitting large amounts of solid material into the atmosphere will remain a focus of attack on the diesel. engine, and this attack, if upheld, could spill over into an atack on truck bus, and other urban areas.

While it is difficult to forecast whether or not these U.S. legislative proposals will be upheld they midoubtedly pose the most serious challenge which the diesel engine has had to meet so far. The challenge is made even more severe by the low levels of gaseous NOx which are required If the U.S. legislative proposals are en-dorsed there is always the pos-sibility that other countries will sibility man orner commerce with follow suit. Experience with earlier exhaust emission legisla-tion would indicate however, that apart from Japan the out. look for the diesel would be more optimistic in other

countries. The likely market trends over the next twenty years or so are shown in the accompanying table. The large market opentable. The large marker open-ings available are in the small industrial and light dust vehicle fields where the potential sales; especially in the U.S., are very large. Exhaust particulate legis. lation could however com-pletely shut off these potential

U.S. markets. Fuel quality trends are the likely to have any large effect, on engine design or usage in this time scale, although the first could influence the power plants emerging towards the end of the century. In certain special markets, however methanol and ethanol might become available but would best be used in spark-ignition; engines, either with or without

charge stratification.

In the smaller size of engine high compression ratio develop ments of the current spark-ignited petrol engine are likely to be the most serious contender to the diesel englise; None of the other alternative powerplants would appear to have any promise of a large market share in the next 20 years.

The compound diesel engin with reduced heat losses but probably without the complications of a bottoming cycle may be used in high-power, long-haul trucks in five to ten years

C. C. J. French Director, Ricardo Consulting

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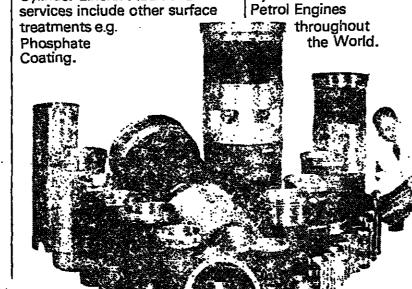
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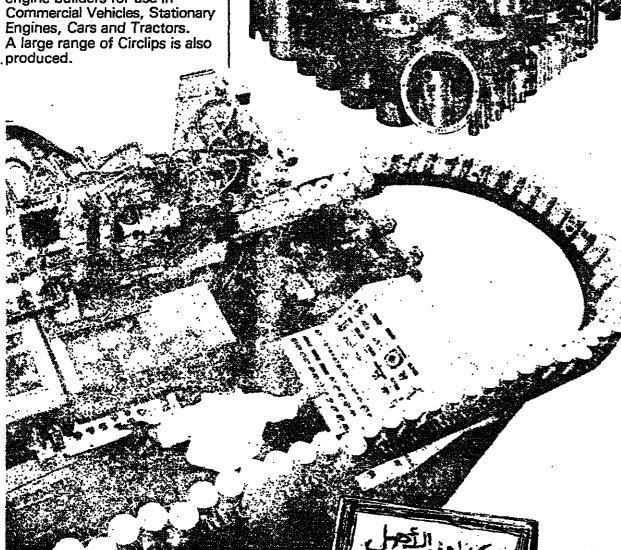
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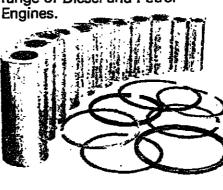


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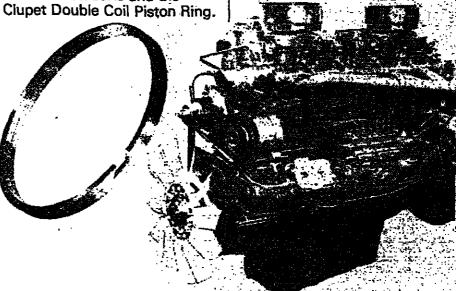


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A monument survives in the mist

T THIS TIME of year you Gaetano Stammati, the Public lagoon, Malame co, Lido and onder why anyone actually Works Minister, has formed yet Chioggia, whenever a storm ves in Venice at all. The vening rush hour trip from iazzale Roma, the end of the auseway from the mainland to he centre of the old city in a ammed vaporetto steamer is, if ossible, even more uncomortable than the equivalent xperience in a Rome bus. It s very damp and very cold.

Oily black water lass menac-ngly just a fost or so below he steps into St. Mark's Square-then the fog descends, the eriest moment of all, the lights in the palazic along the Grand anal are reduced to the palest limmer, while other boats glide bout like half-seen ghosts. You lmost expect to wake up in the norning and find the whole lace has vanished into the

Between November and March very year the scirocco wind lrives extra water up the idriatic, into the lagoon and up nto the square itself, on averge 30 times. Even when it is iry, everyone, seems to be rearing shoes with very thick ubber soles. When the acquaulta arrives, trestle tables ilta arrives, trestle tables sinking no longer, though claims tacked up next to the Doge's that it is rising should be talace are bastily assembled treated as warily as suggestions

No wonder then that so many oreigners, when they see -all his and the back capals where ubbish floats along amid the rumbling stucco and rotting poarded-up doorways, assume hat the fate of Venice is sealed, hanks to the inertia of the talian authorities Indeed, lve years after the Rome Par, and wrangling to which Italy's iament passed a special law to administrative structure lends tolp the city, progress towards itself, and of the dilemma of Covernment rejected every one epitomised in the argument over

another commission which is to threatens, publish the result of its cogitations by next March.

Officials of the city and the Veneto region are reluctant to dramatise matters, an attitude which can easily be interpreted as complacency. In part it stems from a genuine conviction that things are not as bad as sometimes made out — "Venice is not, going to disappear tomorrow, whatever the loreign papers may suggest," says Sig-Mario Rigo, the Socialist mayor and in part from an understand-able irritation at having to run a place that is not just a from regional capital but a living 70,000. museum about which most people with an interest in the arts have a passionate and almost proprietorial view.

Not sinking

To a certain extent a more relaxed line is justified. Now that industry no longer may extract water from the subsoil, Venice is for practical purposes nto an improvised walkway that the leaning tower of Pisa above the water. Is moving back to the perpendicolar Moreover the absence of serious damage to the city from the devastating earthquake of 1976 in Friuli, not so very far to the north, is proof of a kind that its foundations are pretty solid.

> Venice is an extreme case. both as an example of the sloth

> needed and these are only likely to come from a free enterprise

doubt be strongly resisted by

other parts of the establishment.

iow standard of living.

Norbiton

No. 14

That would obviously solve the problem of the acque alte-but only, so its opponents claim, to the possible detriment of the functioning of the port of Venice, the city's largest single employer, which gene-rates twice as much income as tourism. Whatever the risk of extra pollution, the Veneto authorities want to raise traffic from the present level of 24m tonnes annually to nearer its capacity of almost 50m, with the hope in turn of pushing up the number of jobs provided from 35,000 to conceivably

But Sig. Rigo argues that if anything went wrong with so sophisticated a dam, ships could be trapped inside the lagoon, revenue be lost, and business could move to somewhere less troublesome, like As for pollution, he Trieste. points out that the historic city, with its 100,000 inhabitants has now switched from naphtha (with a high sulphur content) to methane for its gas supplies. The acque alte do at least have the advantage of increasing the circulation of water through the canals, helping to keep Venice a little cleaner than it might otherwise have been. Only once pollution has been properly controlled, should the inflatable dams be installed. In the meantime, according to Sig. Mario Ulliana, the regional commissioner in charge of dealing with the city's problems, L 58bn (£36m) of anti-pollution

That then is the optimist's he rescue seems maddeningly reconciling conservation with case. The heart of the low. Only last month the economic growth, This latter is pessimist's is the sheer impossibility of getting things done quickly. Venice affords a textof sixe schemes submitted in the schemes in particular quickly. Venice affords a textversponse to a tender, for prothe proposal for a sort of giant book study of the disadvantages
the steady drain of population the city and its poorer onshore cities of northern Italy, like homes, restoring them, and
texts to control the water level inflatable dyke to close off of having too many tiers of away from the city since the
cousins of Mestre and industrial Venice, Padua, and Vicenza then hoping to keep the rents
in the lagoon. Instead Sig. the three channels into the government (a lesson, although 1950s is finally reversed. Then Marghera have elected a Comwith central Europe. The low enough for the original

work is under way, and a further

L120bn is planned.

"When the acqua alta arrives, trestle tables are hastily assembled into an improvised walkway above the water."

Britain is not Italy, that might there are 30 organisations in 14 munist-Socialist coalition, which not be entirely lost on the countries, and the wealth be-naturally tends to see things advocates of UK devolution). self all have a finger in the pie. Rome is responsible for the tidal problem, and for restoring public buildings, the region for dealing with pollution, and for installing a decent sewage system. The city itself is responsible for refitting and restoring the houses in which

countries, and the wealth be- naturally tends to see things hind them, all devoted to differently sometimes from the "saving Venice." The longer Christian Democrat controlled Central Government, the re- "saving Venice." The longer Christis gion and the city commune it- money made available stays region. idle in the banks, the angrier

they are apt to get.

It would all be very well if everyone were pulling in exactly the same direction: but in Italy things are rarely so simple, and least of all Venice, for which there often seem to be as many solutions as there are benefac-

Top-level Canadian mission led by Mr. Jack H. Horner, Minister of Industry. Trade and Com-merce, in Peking, China, for

GENERAL

trade talks.

Competition

House, 11 a.m.

OFFICIAL STATISTICS

for wholesale price index.

For the Veneto authorities, Venice is only a part of an inter- interests of an area which has nationally-slanted master plan always felt a little uncomfortfor the region. This would include a canal link inland to Padua, and ultimately into industrial Lombardy, and a brand Venice town hall, people tend new Venice-Munich motorway, a to concentrate more on day-to-20th century version of the age day problems. The left-wing

Veneto has joined an international "co-operative" along with eight other regions from Austria, Yugoslavia and West Germany, and Italy, dubbed Alpe-Adria, to promote the

able as a north eastern appendage of Italy.

Inevitably, at Ca' Farsetti, the

occupants to come back, after an enforced stay in what the Italians crudely describe as a casa parcheggio or house to park yourself, outside the city. Sig. Rigo has a pretty

drastic idea of what should be done, which will not endear itself to the international community: cultural simply cannot have a free market of housing here. I want a law to stop flats and houses in Venice being sold to tourists. They must be kept for the Venetians. Remember, here we cannot build upwards or outwards." Those in search of the ultimate in elegant holiday apartments will be relieved to know that thanks to the opposition of the region the scheme is unlikely to get very far. Nor probably will another whereby Venice proper should be made unit, cut loose from Mestre and

In the meantime, it can take up to two years for approval restore a single house, a symptom of what Sig. Rigo declares somewhat euphemistically, to be the perfectionism." w which bedevilled plans to bring back Venice to full health. But revival work is going on. Scaffolding surrounds many lovely palazzi. The floor of St. Mark's cathedral undulates disturbingly, but a man was lovingly restoring a bronze font lid in a side chapel.

What should never be forgot-ten, too, is that "saving Venice" means "saving" everything-not just the odd church and a few fine houses. The task inevitably will take a monumentally long time, and should be done will drive many a foreign well wisher, and not a few Italians as well, to something near despair. But at least the city is not simply going to disappear one of these foggy

Letters to the Editor

Slumpflation in Britain

rom Mr. H. Saxon Tate:

Sir -- Samuel Brittan - ended is December 14 article by sayng "A political and economic -ystem which forces people not o work when there are unsatised needs which their producion could supply does not leserve to survive." This Imnediately raises the question as it has survived and whether it will survive in the

The Economic League is only Government, and they would no ber of people on the extreme Right and the extreme Left who are putting a considerable effort into engineering the system's lownfall. One of the tools commonly used is this fallacy of the "lump of labour." To dismiss the fallacy one only needs a reasonably simple explanation of the modern British pheno-

menon called "slumpflation." I suggest that this lies in lencient demand: that deficient, H. Saxon Tate, demand has been brought about. The Economic League, by insufficient discretionary dis First Floor, ossable income that insufficient Applied Hou liscretionary disposable income Palace Street, SW1.
has been brought about by low
productivity: and that low productivity has been brought about by the general attitude of

the British people.

We know very well that one working hour in the United From Mr. D. Wilkins states or Germany adds some Sir,—I was intrigued States or Germany adds some Sir,—I was intrigued to learn hing between two and three from Mr. Edward's letter times the value that one work. (January 4) that the Greater times the value that one workabout in that Cadillac. One tiay district gives its name to no less Brittan (January 2) is right I will own one of those." This than 13 other shades and if so when he says that we are in the is an attitude which herps to increase productivity and thus increases demand, either through higher purchasing power or lower cost of goods. Britain by and large, will say Sr. MD (December 21) in- and mayordable reasons. Any A small container, which can "Look at that idle rich man rid- vites air passengers to institute good airport must therefore readily be loaded into the air-layen't got one therefore he the world's airport have adequate facilities to craft container by forbild.

main industrial countries until white star would grace the conthe population of this country venience of O'Hara (which copes and those who are boarding accept the vital need for a admirably with more flights and flights which are "on time" is change in attitude. It is encour passengers than any other airtinging that in the last few years point in the world! Kennedy main industrial countries until white star would grace the coniging that in the last few years port in the world), Kennedy. British companies have started Flumicino, and Orly. to put a considerable effort into which the layman can easily available to all employees and the planning ignores the most spending time and effort help vital need.

mg people understand the con-I fear, however, that this ridor, wide enough to take a if optimistic, departure time, alone will not be enough to have, series of desks with adjacent. The baggage game probab free enterprise parts of the however, in the real world, it is

appears designed to avoid teach- what, please, are they? Or is midst of a "civil war"; this war ing children that if they try to one shade and one number allo- has been going on for a very get more than their share they cated to each district in the long time. The great majority will find themselves steadily get-manner of "Neasden No. 11" or of disputes that inevitably arise, ting less and less. As the great "Surbiton No. 1"? If the latter however, are settled within the majority of children are today is the case. I assume there is normal negotiating procedures, educated by state-controlled an appropriate colour for Brent and only when these have failed schools, there appears to be ford and use of this would is there normally recourse to only one remedy and that surely have been more logical, if industrial action. remedy lies in the hands of the not necessarily more pleasing Government. Only a thange in from the aesthetic poin what we are taught can David J. Wilkins, eventually alter the "he 118; Gloucester Road, shouldn't have more than me. Norbiton, from the aesthetic point of view, moral one, but it does not lie

therefore, if he has take it off Kingston upon Thames, Surrey him" syndrome. Significant changes to schools curricula are

The strike weanon

certain trade unions and various From Mr. L. Sutton Sir,-It is easy enough to

I suggest that until we get a speak in a general way of desires Government which is strong and principles, but more difficult enough, determined enough and to see where the one ends and far sighted enough to do so, this the other begins. country will continue to suffer No doubt Mr. Imrie (Decemfrom high unemployment, low

ber 19) regards it as a point of productivity, insufficient principle that he should provide demand and insufficient invest- properly for his wife and chilproperly for his wife and chil-dren; no doubt, also, govern-ments desire to provide the civil ment, all of which add up to a service at reasonable cost to chap?
society. Should Mr. Imrie L. A. Sutton.
abandon that principle in order 12, Peaslands Road, to satisfy the desires of government? Or should he instead satisfy Miss Gough (December 28) who argues that "any employed person is free to resign if he dislikes his conditions of employment" and sacrifice his family's standard of living rather than give in to his own priociples (or are they now

desires")? To the extent that employers ing hour produces in Britain: London Council's award-winning desire to contain their costs, Labour leaders in North refuse transfer station at Brent and employees desire to main-America have an attitude which ford is painted in "Norbiton No. tain or even improve—their says "Look at the boss riding 14." Does this imply that our standard of living, then Mr.

The real dilemma is indeed

between principles on the one hand and desires on the other. The real dilemma for people such as your correspondents surely occurs when, for example as both Miss Gough and Mr. Imrie have pointed out—govern-ments decide unifaterally to abrogate agreements reached through normal procedures or act unfairly in their interpretation of their own pay policy". In such circumstances, when governments act immorally, are employees wise to refuse to take up the only weapon left available on a point of dubious "principle" which may, in any case, include a desire (and a perfectly reasonable one) to be seen to be acting more responsibly than the other

Saffron Walden, Essex.

Do not blame the worker

From Mr. S. Penwill Sir,-In your general news summary of January 3 it was stated that "more people reached work than many industries (sic) had feared." The worker is often blamed for the troubles of industry, but is this

S. W. Penwill, 158, Fenchurch Street, EC3.

The passenger and his needs

haven't got one therefore he the world's airports, akin to shouldn't have one take it off IFALPA's. He also states that him." This unproductive attaining airport anthorities, and ude has led to the current situation especially the British Airports tide has led to the chargest same especially the British Airports spin in which anybody who Authority, are aware of passers works hard and thrives soon senger ("pax") requirements had be must hand over by far and seek to incorporate them in the greater part of his income their planning. As a "pax" to the taxman So why make an who travels relatively extension or take a risk when one sively and frequently, I would, much to be far safer to join a with respect, disagree. Many might be far safer to join a with respect, disagree. Many modern airports, such as I submit that we shall con Boissy Narita Landretter, Gattinue to suffer from unemploy wick and heaven itselfment problems and fail to match. Heathrow would immediately the standard of living of other be awarded my black star. My

True, when passing through programmes designed to help one of my black star airports, ing but totally uninformed staff, programmes designed to neith one of my black star arrors. Ing but totally uninformed staff, should be closed down and the aconomic workings of their arriving or departing, these air use of the word "delayed" organisations. This is evidenced ports are "clean, comfortable, by the numbers of companies and sometimes swift to pass through "But MD's planning, be the facility to push out one's report and accounts in a form based on his list of "pax" flight number on a button which the layman can easily requirements all too often fails based on his list of "pax" flight number on a button requirements, all too often fails adjacent to a television screen understand, making it freely to meet passenger needs because and be immediately rewarded

> In an ideal world, all that an the flight, including the cause of airport requires is a long cor- the hiccup and the then current,

ensure a comfortable and reasonably pleasant wait, for reasonably pleasant wait, for baggage delivery. While the periods ranging from one to 12 hours, for hundreds if not thousands of frustrated, agonised "pax." None of my modern," black star airports, as far as I can discours has come. as far as I can discern, has even attempted to meet this now routine hazard of air travel. Congestion (or the more fav-oured expression "chaos") will greatly increase with the steady introduction of cheaper long-

distance travel Segregation between those

are often inaudible and which appear to be operated by charmwith complete, continually updated, accurate information on

The baggage game probably much effect, and as far as I am facilities for boarding and leaver constitutes the second greatest aware it only happens in the ing aircraft. Unfortunately, source of fun and games to all connected with air travel and it economy. Moreover, the effort an undoubted fact that, world remains a mystery to me why it Terence Bates. is substantially muted by the wide, less than 10 per cent of is still necessary for each piece Knollys House, current education system which flights are "on time," often the of baggage to be manhardled at 11, Byward Street, EC3.

of extra leg room available.

Hhe system outlined by MD will have two immediate results. Any passenger arriving by car will have to sit fuming outside the access tunnel until there are fewer cars inside the airport than car-park spaces; in other words, no drop-off facilities where passengers, their wives or husbands, or, dare I say it, even a chauffeur, can merely drive into the airport, drop off the passenger and drive directly out again.

If a mere "pax" may be permitted to comment, one of the real problems at Heathrow is the mixture of administrative and other office buildings with passenger facilities. The result is to impair the efficient operation of all. If authority is given for a fourth terminal, it ought to be on terms that office accommodation and associated facilities and car parking of an equal area is transferred to an-other part of the airport. Airlines might be invited to lease the vacant space for passenger lounges with a consequential increase in good will.

Today's Events

COMPANY BESULTS Final dividends: Caplan Profile Group. Reo Stakis Organisation. Interim dividends: Brown and Hogg Robinson Group. Tawse. Interim figures: Negretti and Zambra. Great Northern Invest-

Services opens two-day conference on lotteries for Local Authorities, Imperial Hotel, Blackpool. Sir Kenneth Cork, Lord Mayor COMPANY MEETINGS See Week's Financial Diary on Page 33.

of London, receives Agents General of Canada at Mansion EXHIBITIONS London International Boat Provisional December figures

door Holiday Exhibition and Motor Caravan Show (ends January 14). Model Engineering Exhibition, Wembley Conference Centre, Middlesex (ends January 13). Racing and Sporting Motorcycle Show. Horticultural Halls, London, SWI (ends January 14). BFM Furniture Show, National Exhibition Centre, Birmingham (ends January 10).

SPORT Soccer: F.A. Cup, Fourth Show, Earls Court (ends January Round Draw, London, noon. 14). Holidays '79 Camping Out-Rugby Union: Aunouncement of

England training squad. Racing: Leicester, Sedgefield. CITY OF LONDON LUNCHTIME MUSIC

Hallows-by-the-Tower. recorded music, 1 pm. St. Lawrence Jewry next Guildhall, piano recital, Mark Troop, 1 pm. St. Michael Cornhill, organ recital, Michael Stuckley, 1 pm. CITY OF LONDON SPECIAL CHURCH SERVICES

St. Martin, Ludgate. Epiphany carol service in aid of the Greater London Fund for the



"Nice material, Marco," observed the Duke, fondling the silky suit-length which his recently returned Far Eastern emissary was displaying on the steps of the Palazzo. "But where's the tailor to do it justice?" You can be sure Marco Polo had the answer. For this

traveller extraordinary had brought hitherto unknown enterprise and variety to the trading profession, establishing a tradition most notably exemplified in the

modern world by The Ward Group. For example, Ward companies manufacture over 1 million tonnes of Portland cement per year, to be sold

by Ward in the UK and overseas markets. It was a Ward division which recovered two massive steel structures-each the size of a football pitch and weighing over 11,000 tonnes-from the North Sea oil

fields, to recycle for British industry. Another Ward Group company is currently supplying switches and crossings for the Hong Kong rail system. Enterprise and variety. Just two of the many attributes of this Sheffield-based organisation, practised with a · panache which would have filled Marco Polo with professional envy.

THE WARD GROUP

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P'NDING DIVID'NDS

CMT forecasts expansion as product demand rises

In the current year, demand for the products of Central Manufacturing and Trading Group is continuing to improve. particularly for industrial services, Mr. Norman Hickman, the chairman, tells shareholders.

Mr. Hickman says that while

the economic outlook for the nation looks cloudy, nevertheless he believes the group is well placed to continue its expansion in the foreseeable future.

For the year ended July 31,
1978, pre-tax profits were £3.73m

against £3.94m from turnover of £60.09m compared with £56.32m. The chairman explains that the last few years have seen a lack of economic growth in the UK, indeed many industrial sectors have been depressed. It is with this background that the group reported slightly lower profit than last year, which was unhelpful economic itself a record.

Despite not being able to improve on last year's profit figure.
it is felt that the result is satis-

BOARD MEETINGS

The following companies have notified dates of board meetings to the Stock Exchange. Such meetings are usually held for the purpose of considering dividends. Official indications are not available as to whather dividends are interims or finals, and the sub-divisions shown below are based mainly on last year's timetable. TODAY interims:—Brown and Tawas, Hogg Robinson, H. Samuel. Finals—Caplan Profile, Reo Stakls Organisation.

Future Dates

stances.
All divisions traded well under the circumstances and competed vigorously for the available

The most profitable division industrial services — generally traded well with the exception of industrial rubber products where demand slackened in line with the UK rubber industry. The volatile nature of metal

ocessing was once again shown this division slightly increasing its profits on a 20 per cent lower turnover than 1977. The group experienced the

continuation of the world wide recession in demand for steel; the steel stock holding division performed creditably with sales increasing by 8 per cent but with reduced

Despite problems the group's management is geared to grasp opportunities and will no doubt improve performance. "We re-main committed to growth which we wish to achieve both organically and by broadening the base of our products and services," Mr. Hickman states. Meeting, Birmingham, Feb-

20p share, paid in October, was 4.5p, against 3.9p net.

Brockhouse

sees further

WITH A satisfactory outstand-

ing order book and barring outside influences, Mr. R. J. H.

Parkes, the chairman of Brock-

house, says the directors expect

to make further progress in the

petitive edge in the market seg-

ments in which we operate has

been sharpened during the

year." he says, and adds that given this and fair market con-

ditions, "we look to the future

As reported on November 24

taxable profits for the

I am satisfied that our com

progress

current year.

with confidence.'

from £5.166 to £5,506.

Downturn at D. C. Thomson

newspaper owner and publisher, earing and performing it profitwere down from £4.37m to £3.21m ably.
in the year ended March 31, 1978. As reported on December 14, In the year ended March 31, 1978.

Investment income amounted struck this time after exchange to £2.76m against £2.29m and net fluctuations of £355,204, pre-tax income was £2.72m compared profits fell from £3.43m to £2.89m with £3.26m previously.

Whessoe prospects

IN HIS annual statement, Lord Erroll, the chairman of Whessoe, says that for the current year, Aiton, light engineering and overseas heavy engineering subsidiaries are expected to main-tain performance and profits much in line with the previous

However, the outlook for its main UK heavy engineering operating units is less assured, he

Lord Erroll explains that current year prospects, though rea-sonably assured for Aiton and light engineering, still depend on

OPPORTUNITIES

DIAMONDS FOR INVESTMENT

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TRAVEL

INVESTMENT

(£4.99m), shows: heavy engineering £57.54m (£34.96m) and

STAVERT

A PROFITS improvement is announced by Stavert Zigomala and Co. (Hldgs.), furniture wholesalers and investment com-

The trading profit is up from £2,451 to £2,989 in the half year to September 30 1978. With the inclusion of the investment in-come the pre-tax figure comes out at £14,720, against £13,639

is increased from 3.6236p to Meeting, West Bromwich, February I, at noon.

NEWS ANALYSIS—MANAGED FUNDS

The best of both worlds

GROWTH OF L&G PENSION

MANAGED FUNDS

can identify his assets without much bother. And be is rot

paying for any investment

ment risk himself, and gets the full benefit of good performance.

If the fund performs well, the value of the units rises, and

conversely if it performs badly. This unitised concept was first

devised by certain unit trust groups as a means of offering

equity investment to pension schemes, and thereby attracting funds. But once the life com-

nanies entered this field, they

proceeded to dominate the

market. They had the contacts

with employers and schemes

already on their books.

But more importantly, the life

companies could offer invest-

ments not only in equities but

in the whole range of invest-

he broadly divided into two functions. There is the strategy

to be adopted in apportioning

in order to ensure a good return.

tion on which there are two

schools of thought among life

companies.

Many life companies regard

investment as a subject to be

Canada's largest trust company

insurance broking subsidiary Roytrust Insurance Services.

LADBROKE OFFER UNCONDITIONAL

Acceptances of the recommen-

ded offers on behalf of the Ladbroke Group for the whole of Myddleton Hotels not already

owned, have been received from over 81 per cent of the holders

Taking into account the ordinary shares already owned

by a Ladbroke subsidiary and the ordinary shares acquired by

Ladhroke under the terms of the

offer, Ladbroke now owns over 91 per cent of the ordinary

of Myddleton ordinary.

management

investment

Pension funds investment can

ment media

investment

1,000

800

INVESTMENT Management Services to Pension Funds have now become big business for life companies. Last week, Britain's largest pensions company, Legal and General Assurance. announced that funds managed by subsidiary Pensions Management had passed the £1bn mark in just over eight years. The funds managed by Prudential Pensions, member of the

Prudential Corporation group, are approaching £400m, those by Standard Life's subsidiary nearly £200m. In all, the amount of managed funds operated by life companies is estimated at £2.5bn. This impressive growth in managed pension funds has taken place within the past ten Before then, employers years. using a life company for operat-

ing their pension schemes had their contributions invested in a central fund, together with all other pension plans of that life

This fund was invested across the whole range of investment media-equities, property, and fixed interest—and the return made to the client depended on two factors. These were the investment performance of the managers and the amount of profit the actuary was prepared to release following his valua-

But employers, advised by their pension consultants, were becoming increasingly dissatisfied with this "insured scheme be method, despite the good returns being provided. First, they wanted to have their scheme assets easily identifiable and not completely lost in a common fund, and second, they wanted some involvement in the investment management

Finally, under the insured scheme method, employers were paying for investment guarantees that they could more effectively carry themselves. In short, employers were look-

the assets between the various investment media and constantly ing for the best of both worlds in a self-administered scheme and in a scheme run by a life reviewing these proportions And there is the tactical decisions to be taken within each different type of investment The solution put forward was the managed pension fund concept. The day-to-day investment decisions are best left to the This is quite a straightforward experts and this pooled fund technique provides prefessional

procedure. The financial institution operates a common investment fund on the unitised principle. The pension scheme, in making its investments, buys units in the fund just as an individual investor buys units in a unit trust. The funds are valued periodically, usually a month. Thus, the value of the pension scheme assets are simply the value of the units held.

handled solely by the experts and consider that the layman should leave well enough alone. So they only operate one fund, a mixed fund, in which the life company decides on the mix between the various investment

The life companies will, and often do, discuss with clients their investment aims and philosophy. But the client cannot change those views, if he disagrees.

Other life companies feel that the client should be able to decide on the investment mix in conjunction with his consultant and other advisers. So they offer a wide range of funds covering equity, property and fixed interests as well as a mixed fund.

In practice, the difference in approach is academic, since, when offered a choice, over 90 per cent of clients pick the mixed fund, thereby leaving all investment decisions to the life company. But there can be variations on this theme

Legal and General only operate a mixed fund, consisting of equities and fixed interest investments. The property fund is completely separate. So clients have to discuss strategy regu-larly with the company, even each time they give L and G full discretion.

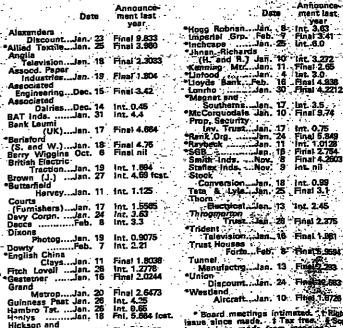
The Pru, in contrast to all other life companies, does not equities, property, and fixed interest. But handling the strategy of pension scheme investments is a different situaoperate a mixed fund. It runs an equity, a property and a fixed interest fund and advises clients individually on the required proportions to be invested in each fund. But most other life companies have a straight-forward mixed fund, consisting of equities, property and fixed

> Most life companies take a defensive attitude marketing these managed funds, making them available to existing clients seeking a change from insured L and G, have adopted a more aggressive attitude, offering these funds as providing investment services to pension schemes, thereby challenging the role of merchant banks and stockbrokers.

In particular, managed funds offer a direct property-investment vehicle to pension schemes —the property fund of L and G at £418m is the largest of such funds available to

schemes. The Pru has switched to an aggressive stance over the past two years and has achieved considerable success attracting a lot of new clients. The start of the new state pension scheme last April has given pension scheme investment a tremendous boost and continued steady growth in the provision of managed funds is anticipated.

The dates when some of the more important company dividend statements may be expected in the next few weeks are given in the following table. Dates shown are those of last year's announcements except where the forthcoming board meetings (indicated thus') have been officially published. It should be emphasised that the dividends to be declared will not necessarily be at the amount are rates per cent shown in the column headed "Announcement last year." Preliminary profit figures usually accompany final dividend



*Megnet and Southerns ...len. 17 Int. 3.5 *McCorquodale Jan. 10 Final 9.74 Prop. Security Inv. Trust...Jan. 17 Int. 0.75 *Rank Org.Jan. 24 Final 5.849 *Rank Org.Jan. 18 Final 5.849 *SeB......Jap. 18 Final 2.74 Smak Inds...Nov. 8 Final 4.260 Staffer Inds...Nov. 9 Int. nil Conversion Jan, 18 Int. 0.99
Teta & Lyle Jan, 25 Final 3.1
Thora Bactrical Jan. 13 Int. 2.45 narton Trust. Jan. 26 - Final 2.375 Trust Houses Forte...Feb. 8 Final's 9594

Board meetings intimated. TRUI issue since made. I Tax free. See issue since made from reserves.

BASE LENDING RATES

A.B.N. Bank



LOCAL AUTHORITY BOND TABLE

		Interes		Life
Authority (telephone number in parentheses)			Minimur sum	
	% -		3	Year
Barnsley Metro. (0226 203232)	12	i-year	250	3.7
Barking (01-592 4500)	. 113	} year	1,000	4.6
Barking (01-592 4500)	12}	}-year	5,000	4-6
East Lindsey	124	-year	2,000	3-10
Knowsley (051 548 6555)	121	-year	1,000	6-10
Manchester (061 236 3377)	12	}-year	500	5
Poole (02013 5151)	113	}-year	500	2-3
Poole (02013 5151)	124	≟-year	500	5-
Poole (02013 5151)	121	<u></u> -уеаг	500	67
Redbridge (01-478 3020)	12	i-year	200	45
Sefton (051 922 4040)		½-year	2.000	3-7
Wrehin (0952 505051):	12‡		1,000	
				7 7



11.035 11.169 11,183

Deposits of £1,000-£25,000 accepted for fixed terms of 3-10years. Interest paid gross, half-yearly. Rates for deposits received not later than 12.1.79. Terms (years) 3 4 5 6 Interest % 121 121 121 121 121 121 121 121 121 Rates for larger amounts on request. Deposits to and further information from The Chief Cashier, Finance for Industry Limited. 3! Waterloo Road, London SE1 8XP (01-928 7822) Ett. 177). Checues payable to "Bank of England, a/c FFI FFI is the holding commany for ICFC and FGI.

FINANCE FOR INDUSTRY TERM DEPOSITS

Ge Capital expenditure on plant and machinery is now reflecting improved performance and we confidently expect this trend to continue 99

R. J. H. Parkes, Chairman

Other salient points from the Chairman's Statement

 Export sales have shown a considerable advance and we shall continue to give high priority to this area of our

 Selling prices and margins continue to be under pressure and although profit at £3.5m is well in advance of last year it is below our target.

£2.4m was invested during the year on plant, machinery and buildings. Expenditure in the year shead will exceed £3.5m. Our financial resources are adequate to meet this programme.

Our outstanding order book is satisfactory. and of a better quality. Barring outside influences we expect to make further progress in the year aliead.

Results to 30th Sept. 1978 1977 £69m up from £61m Sales Profit before tax £3.5m up from £2.6m Profit after tax £2.6m up from £2.5m Dividend per share 4.9463p up from 3.6236p Earnings per share 15.11p up from 14.72p



Trading profits of D. C. further successes in winning Last year pre-tax profits totalled Thomson and Company, Scottish additional work for heavy engin-

The dividend is 19.9325p net 1978. Completed sales were highper £1 share against 19.635p. er at £81.09m against £49.97m.

The company, based in Dundee, is private and unquoted.

A divisional breakdown of sales and trading profits, £4.84m (£4.99m) chows because year engineer. A divisional breakdown of sales and trading profits, £4.84m

ing £37.54m (£34.96m) and £1.13m (£2.39m), light engineering £4.65m (£4.55m) and £0.71m (£0.87m), and Aiton £18.9m (£10.45m) and £3m (£1.74m) respectively.

ZIGOMALA

September 30, 1978, year rose from £2.62m to a record £3.54m. Sales were ahead at £69.4m against £60.8m and the dividend

COMPANY NOTICES

ART GALLERIES

This announcement appears as a matter of record only.

Fuqua Industries, Inc.

NACIONAL FINANCIERA S.A.

SU.S. 100.000.000 Floating Rate Notes
In accordance with the terms and
conditions of the above mentioned
floating rate notes the interest rate
applicable for the six months period
beginning january 5, 1979 has been
fixed at 135%; p.a.
EANQUE INTERNATIONALE A
LUXEMBOURG
Societé Anonyme
As Fiscal Agent.
Lucembourg.

VECTIS STONE GROUP LIMITED

GARGOYLE, 69, Dean Street, London, W.1. NEW STRIPTEASE FLOORSHOW "AS YOU LIKE IT " 17-3.30 am. Show at Midnight and 1 am. Mon.-Fri, Clojaed Saturdays, 01-437 6455.

NOTICE IS HEREBY GIVEN that the Ordinary Share Transfer Books will be closed from 5 p.m. on Friday, 19th January, 1979 and will re-open again on Wednesday, 24th January, 1979.

By Order of the Board, St. Georpe's Down, BIRCHAUL, Secretary, St. Georpe's Down.

CLUBS

BIDS AND DEALS

Hawthorn Leslie more than doubles Anglo Swiss stake

Leslie may yet emerge as a major shareholder even mount a rival bid for Anglo Swiss Holdings for which Armstrong Equipment has agreed to pay

Armstrong's bid is worth 54p a share but last week Hawthorn Leslie, which is also thought to have had designs on the loss making industrial fasteners concern, was buying Anglo shares at 59p apiece.

As a result it has more than doubled its stake in Anglo to 10.1 per cent. Armstrong's terms emerged on January 1 after Anglo's sbare price had been suspended at 29p at the company's request.

But there is some confusion as to whether the suspension request was as a result of an

or Armstrong.
Armstrong's chairman, Mr. Harry Hooper, says that under his banner he would expect Anglo to be making profit; by the end of 1979. In the three years to December 31, 1977, the group had made pre-tax losses totalling 400,000. Armstrong has already agreed

to buy a 44 per cent stake in Anglo—from the Anglo directors and other shareholders. It now remains to be seen how far Hawthorn Lesile will proceed in its buying of Anglo

ROYAL TRUST

CANADA

Royal Trust Company of Canada, the UK subsidiary of Royal Trust Company, Montreal,

The share and cash election under the terms of ordinary offer has now closed and the preference offer has been exten-ded until 3 pm on Friday, January 12. The ordinary offer has been

declared unconditional and will remain open for acceptance until further notice,
The Stock Exchange has admit ted the 699,716 new Lachroke shares to be issued oursuant to the ordinary offer and the warrant scheme-dealines in the new Ladbroke shares are

expected to commence today. SHARE STAKES

Johnson Matthey - Johannes-burg Consolidated Investment holds 3,907,700 shares, Prudential Assurance 855,227, and Angle American Corporation of South Africa 851,000 each over 5 per cent.

· Charterhouse Groun-Mr. G. C Rowlett, director, has evervised options on 30,000 ordinary shares at 32,16660 per share. He has sold 27,500 and retained 2,500 Bernard Wardle-Birmingham and Midland Counties Trust has acquired further 60,000 shares making holding 3,063,000 (17.09

Braid Group—Pearl Assurance has bought 60,000 shares increas-ing holding to 310,000 (517 per cent).

(7.64 per cent.).
Levex—Further to the announcements printed on December 19 and 23—now stated that Mr. K. V. Maharajah sold 50,000 shares at 16p on December 19. His holding is now 144,000 shares (2 per cent.).

WORLDWIDE FUND LIMITED

Chemical Bank

Crédit Lyonnais

Crocker National Bank

December 1978

Continental Illinois Limited

John Foster and Son-Com mercial Union Assurance now holds 496,398 ordinary shares

Net Asset Value per \$1 share as at 29th Dec. 1978 \$11.61

..... A/5.7 1.8 5.4 12.7

RECENT ISSUES

\$184m offer NATIONAL AIRLINES for Mission Insurance

By Our Financial Staff AMERICAN international, a bid \$184m in cash and shares for the capital of Mission in-surance, a company heavily in-volved in the worknen's compensation and of the insurance

market and whose operations

market and whose operations are largely concentrated in the state of California.

Mission had no immediate comment to make on the hid other than that it would call a special meeting of its Board to consider the proposal that AI offer \$40 a share for the 92.6 per cent of Mission not already. per cent of Mission not already owned. The Al offer is in cash for 42 per cent of Mission plus an equivalent value in shares

for the balance Mission underwriters commercial property casualty lines, and workmen's compensation busi-ness accounts for some two-thirds of premium accome. Al said the proposal was conditioned upon approval of a definitive merger agreement by the Mission and on Mission not

entering into an agreement to sell 606,000 of its shares (about 13.2 per cent) to American Financial. Corporation nor entering into a general agency agreement.

General Cinema withdraws bid for Columbia

By David Lascelles in New York GENERAL CINEMA has withdrawn its bid for about 20 per cent of Commbia Pictures after rejection of its offer by Columbia's board. The way thus seems clear for Mr. Kirk Kerkorian, the owner of MGM. to proceed with his offer for an identical stake at \$24 per share. General Cinema-last week said it would affer "in excess of \$24" provided a friendly agreement could be reached. Columbia said it rejected General Cinema's again in 1978 and the current offer because it would create year will also be "difficult." legal, business, economic and This is partly due to the high guaranteed a loan of US\$20m operational problems.". start-up costs of the new made by the bank to Mr. Sada-

INTERNATIONAL COMPANIES and FINANCE

CAB ruling on takeover is facing delay

A GOVERNMENT decision on AMERICAN International, a the merger battle being waged major U.S. insurance group, has over National Airlines will

> Eastern came in the midde of to open separate hearings on the civil Aeronautics Board the merits of Eastern's proportions for control of National mate of a final decision is now which National directly companies a combination with holders' meeting is expected from Texas International Air-lines (TXIA) and Pan American World Airways. The administrahearing was siming to produce a recommendation for the

SHELL NEDERLAND reports

an improvement in refinery activities in Holland for the final

quarter of 1978 though there

was littlé change in the chemi-

cals division.

The company made a profit on

its refinery operations in the past three months of the year

due to the reasonable price level

it achieved for its products and

an improvement in efficiency, the management told the works

Shell estimates that it dis-

tilled 17 m to 18m tonnes of

crude oil in the year as a whole,

representing almost 70 per cent

use of capacity. It is difficult to forecast whether this im-

provement will be continued in

the current year, it said. The

company's operating result may

rise announced by the OPEC

countries and by the possible effect of this on the U.S. dollar.

year will also be "difficult."

Shell expects its chemical

near Rotterdam to make a loss recent years.

be affected by the sharp price

BY CHARLES BATCHELOR IN AMSTERDAM

Last month's intervention by judge will be appointed shortly merger.

vehement statements to the con-CAB decision had been set for suaded many observers that the airlines. former astronaut is not only

operations in 1978 after the loss

BY JAMES BARTHOLOMEW

Moscow Narodny rapidly de-

many others issued by or against

According to MNB's state-

ment of claim, Mr. Chua either

bank following a large

styrene/propane oxide plant. • Foods group Koninklijke Shell expects to make another Wessanen expects 1978 net

loss on its refinery and chemical profits to show an increase from

about FI 300m (\$150m) in At the same time, net profit per

1977. Shell Nederland's sales share is not expected to have

of nearly F1 13bn (\$5bn) in fallen from the Fis11.01 of 1977,

1977 accounted for just under despite an increase in capital

10 per cent of total turnover of according to executive board the Royal Dutch Shell group. chairman Gerrit van Driel.

Writ by Moscow Narodny

MOSCOW NARODNY Bank, the nobu Ogawa or else was himself

next day.

Recovery at Shell Nederland

However, this timetable, anxious to control National but almost certainly forced a post- per cent ownership of National unusually speedy for the CAB also believes he has a reasonsince the TXIA and Pan Am able chance of government almost certainly be delayed by applications were made late last approval. Outside of Eastern

late May.

petes. A combination with
Eastern's \$50 a share proposal National is widely seen as con-World Airways. The administra- was initially seen as an attempt trary to the intentions of the tive law judge conducting the to force such a delay but last Congress which passed an Airline Deregulation Bill in a recommendation for the trary by the alrline's chairman, November designed to spur Board by February 1 and a final Mr. Frank Borman, have per greater competition among U.S.

the Fis16.6m achieved in 1977.

Mr. Chua have sued for an in-

... \$224;-225; \$226-225; \$226.70

Eastern's intervention has

ponement of the meeting of National shareholders scheduled for January 15. National had majority control subject to government approval.

holders' meeting is expected within the next month and the National board may well urge shareholders to accept the highest offer from the airline which wins government

IXIA, a small regional airline and which had never aimed for 100 tional operations.

a formal proposal. Its aim of the surprise \$425m bid by summer and early autumn is his view appears to be a min- been preparing a proxy state—opposed by National but it has now in ruins. Following the ority one because of the antibased carrier.

Eastern proposal another law competitive impact of such a proxy state—opposed by National but it has now in ruins. Following the ority one because of the antibased carrier.

Eastern proposal another law competitive impact of such a proxy state opposed by National but it has now in ruins. Following the ority one because of the antibased carrier.

Eastern Airlines for the Miaminow in ruins. Following the ority one because of the antibased carrier.

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Eastern proposal another law competitive impact of such a proxy state opposed by National but it has now in ruins. Following the ority one because of the antibased carrier.

Eastern proposal another law competitive impact of such a proxy state opposed by National but it has now in ruins. market at an average price of

Lay-offs at American

Motors and Chrysler

BY OUR NEW YORK STAFF

MORE THAN 13,000 U.S. car ting down its Hamtramck (sic) workers will be laid off this Michigan assembly plant for two the industry's two troubled manufacturers. American Motors and Chrysler Corporation, both of which are struggling against weak demand.

American Motors' problem appears the more critical with car sales in December falling by 29 per cent and dealers sitting on enough stocks to last a full five months at current selling

Russian-owned bank registered the principal debtor. The rates. in London, has issued a \$20m guarantee was allegedly made writ in Hong Kong against Mr. in May 1977. On October 6, 1978 being The company's operations are being sustained by the success Chus Kung Siew, a local businessman.

MNB demanded repayment of of its Jeep utility vehicles, and the debt which had risen, by that its passenger car difficulties time, to US\$22.7m. Neither Mr. attach even more importance to veloped a large lending business Ogawa nor Mr. Chua offered any its prospective agreement with in the Far East in the early funds at all according to MNB Renault. France's state-owned-1970s. This latest writ follows and MNB issued the writ the auto company.

The two have been negotiat-Since then, three companies believed to be connected with believed to be connected with the marketing of Renault's R5 junction against MNB to restrain the bank from winding them up.

Small cal infough sand dealers and production of the R18 saloon at AMC's Kenosha, Wisconsin, assembly plant.

Talks have progressed much small car through AMC dealers the time of the original agreement in principle but a final resolution is now thought to be imminent.

AMC was forced to close Kenosha several times last year because of a glut of passenger cars and this week about 6,500 workers were being laid off

until next Monday.

1977 sales were exceptionally low. The company's 11.6 per cent market share last month compared to a 12.4 per cent average for 1978 is a better guide to its current marketing problems. Chrysler's total car sales in 1978 were 7.2 per cent down on 1977.

weeks, laying off 6,800 workers.

Another two plants at St. Louis

and Newark Delaware, are to

be closed later this month so

as to adjust inventories which

remain high despite a modest

8.3 per cent sales increase in

According to several analysts

this achievement is disappoint-

ing because Chrysler's December

Hard pressed financially, Chrysler has been forced into a fresh economy measure involving scrapping plans to build a trans axle manufacturing plant at Richmond, Indiana. Instead, the company will expand its Kokomo Indiana trans-Wisconsin. assembly plant mission plant following "con-Talks have progressed much tinuing cost studies which more slowly than anticipated at showed it would be cheaper" than building a new unit.

Chrysler caused something o a stir last month when it admitted that it had applied for \$250m of Government loan guarentees to build the plant. Chrysler's prospects of securing the guarantees were thought to be unlikely but the company claims that this uncertainty was Meanwhile. Chrysler is shutnot a factor in its decision.

8 per share. Pan Am has bought 22 per nt in the open market and is ressing that its plans would most fair to National's share-lders, the least anti-competive in terms of its impact on	1100pl F.P. 28:12 10012 p 99p Findlay 8° Griv. Cum. Red. Pri	101 99p 10512:- 97p 134 13pm	
e U.S. airline industry and ost beneficial for Pan Am nich claims it needs domestic			
ute structure to complement d support its mainly interna-	Latest 1978,79	200	_

GHTS" OFFERS

61 Ashton Mining BBc. 77 97 maust. Farming AS1. 97 170 Harrisqueensw y 20p 171 98 Kitchen Queen 10p ... 29 31 jM. Y. Dart Deld. ... 31 115 Mill ttsl.'s roshps20p. 132

FIXED INTEREST STOCKS

Renunciation date usually last day for dealing free of stamp duty. b Figures based on prospectus estimate. § Assumed dividend and yield. & Forecast dividend: cover based on previous year's earnings. F Dividend and yield based on prospectus or other official estimates for 1879. § Gross. T Figures assumed. Cover allows for conversion of shares not now ranking for dividend or ranking only for restricted dividends. § Placing price to public, 11 Pence unless otherwise indicated. I Issued by tender. I Office to holders of ordinary shares as "rights." •• Issued by way of capitalization. §§ Reintroduced. T Issued in connection with reorganisation. merger or table-over. [3] Introduction.

I Issued to former preference holders. Allotment letters (or fully-paid). Pro-or partly-paid allotment letters + With warrants

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ALLEN HARVEY & ROSS INVESTMENT MANAGEMENT LTD.

CLIVE INVESTMENTS LIMITED Royal Exchange Ave., London ECSV 3LU. Tcl.: 01-283 1101 Index Guide as at December 19, 1978 (Base 100 on 14.1.77) Clive Fixed Interest Capital 129.92 Clive Fixed Interest Income

Public Works Loan Board rates

Effective from January 6

	€ con	a regins	at	Hon-you	108112	w_ tehard
Years .	by EIPt	A‡	maturity§	by EIPt	Αŧ	maturity§
Jp to 5	13	13	13;	132	131	13?
ver 5, up to 10	13;	13:	13 !	13 7	13.	14
)ver 10, up to 15	133	13	13 !	133	14	14
ver 15, up to 25	13 .	13%	13!	14"	14	14
ver 25	13!	131	134	14	14!	14!
* Non-queta lean:	s Bare 1	per c	ent highe	r in each c		
la 4 4D-			~			

quota loans A. 'Equal instalments of principal. iRenayment by half-yearly annuity (fixed equal half-yearly payments to include principal and interest). (With half-yearly payments of interest only.

CURRENCIES, MONEY and GOLD

plant at Pernis and Moerdijk number of loan foreclosures in

Nervous interest rates

BY COLIN MELHAM

Interest rates moved rather tem, and by Wednesday Fed of their financial years. A major nervously in the world's major funds were back around 10 per hou financial centres last week cent which was presumed to be just Foreign exchange dealers were the target rate of the authoriand doubtful about the dollar's move- ties. ments over the next few months, ... On Thursday foreign exchange cial required substantial support remained alive with rumours con-from central banks when the new cerning a possible rise in the year opened, it was trading fairly U.S. prime lending rates in the steadily by the end of the week near future, and an increase in New York interest rates rose the Federal Reserve discount sharply on the first trading day rate. By the end of the week of this year, with Federal funds the discount rate was still 94 per touching 12 per cent. The Fed. cent, and prime rates ramained eral Reserve then injected sub- at 111 per cent, stantial funds to the banking sys-

CURRENCY RATES

	Special Europe	_
January 5	Drawing Unit of Rights Account	ď.
Sterling	0.841768 0.57406	
U.S. doller	1,29973 1,38006 1,53479 1,61181	
Austrian schilling	17.5086 18.3869	
Belgian franc Danish krone	37.6604 39.6779 6.62112 6.96013	
Doutache Mark	2.38984 2.51544	
Guilder Franch franc	5.46798 5.75783	
Life		
Yan Norwegian krone	255.129 286.583 8.51882 6.86044	
Pesata	90.8475 - 98.2995	ľ
Swedigh krone Swiss imag	5.63573 5.85220 7.13824 7.32629	•

January 5	Drawing Rights	Unit of Account
Sterling U.S. doller	0.641768	0.574057
Canadian dollar		1.61181
Belgian franc	37.6604 6.62118	39.5779
Dautache Mark Guilder	2.38984	2.51544
	5.46798	5.75783
Yan	255.129 0.51882	286.563
Pesata	90.8475	95,2995
Swedigh krons Swiss imag	Z 12824	2.23629

in prime rates is still expected however, and a lift in the dis-count rate would also come as

no surprise. In these conditions no one was predicting the future trend in London interest rates. The UK Treasury bill tender on Friday was largely technical, with the issue of 95-day bills taking the maturity date beyond the Easter holiday, instead of the usual issue at 91-day bills.

It was also a rather compli-cated tender since some discount houses were more interested in the bills than others, because of the situation regarding the end

FORWARD AGAINST £

A rise to at least 12 per cent

ase completes its financial year		Œl
t before the Easter period,	Gold Coins, domestically	
d by holding bills which will	Krugerrand 5257-259	523
mature until the next finan-	(±1173-1184	1 i£1
l year can defer the payment	New Sovereigns564, 68,	×64
	(252-56)	(£3
tax.	Old Sovereigns S854-654 (£514-324)	وود.
The average rate of discount	Gold Coins.	1
e slightly however, and so did	Internationally	-
minimum accepted bid. This	Krugerrand \$2301-2325	
s a strange situation, but alto-	121142-1151 New Sovereigns \$59.81	ين؛ (566ء
her it was rather a complex	(£291.30%)	
der. Some houses were obvi-	Old Sovereigns \$631-651	:£2 \$5
ly not too willing to take bills.	(£5]; 525)	ı £3
	520 Eagles \$295-298	525
n at an increased rate of in-	\$10 Eagles \$1651-1681 \$1 Eagles \$109-113	5 7E
est	97 Eagles 3/43/110	-6 /4

THE DOLLAR SPOT AND FORWARD

	Day's			%	77
Jan. 6	Spread	Close	One month	p.a. Three months	p.a.
	84.28-84.38	84.26-84.29	0.08-0.11c pm	1.31 0.14-0.17c pm	0,7
Nethind.	1.9890-1.9995	1.9970-1.9990		2.18 1.19-1.14c pm	2:58
_ Belgjum	29.02-29.21	29.10-29.13	7-6½c pm °	2.52 21-19c pm	2,64
	: 5.1100-5.1445				
W Ger				8.74 3.62-3.72pf pm	8,15
Portuga		45.60-46.80	30-40c dis	-8.99 70-140c dis	-8.9
Spain	70.11-70.38	70.14-70.19	18-38c dis	-4.64 105-135c dis	-6.84
Italy	833.00-836,50	833.50-834.05	1,20-1,70fire dis		
Norway	5,0265-5.0610	5.0400-5.0420	par-0.40c pm	0.69 par-0.40c pm	0.47
France	4.2125-4.2460	4.2300-4.2350	0.90-0.60c pm	2.12 2.90-2.60c pm	2.50
Sweden	4.3275-4.3425	4,3325-4,3335	1.40-1.20om pm	3.48 3.55-3.35cre pm	
Japan	196.25-196,80	196.55-196.75	2.00-1.85y om	11.36 5.45-5.30y pm	10,93
Austria	13.483-13.573	13.55}-13.57\$	6.75-5.75gro pm	5.35 18.50-16,00gra p	m 5.08
Switz.	1.6422-1.6525	1.6450-1.6480	1.70-1.65c pm	11.77 4.73-4.68c pm	11.44

OTHER MARKETS

							_
	Ba'k rata %		Close	One month	% p.a.	Three months	2 5
U.S. \$ Canadiani Guilder Beiglan F Danish K Port. Esc. Span. Fes. Lira Nrwgn. K French Fr. SwedishKr Yen AustriaSch Swiss Fr.	1714 612 6 8 5 1812 7 912 612 612	5.71.8.75 55.50.94.69 141.59-142.00 1,890-1,890 10.15-19.51 5.61-8.67 18.73-8.77 592-402 27.20-27.40	2.89 (0-2.6920 4.03-4.04 50.75-50.85 10.861-10.561 3.761-6.741	f-2; ore dis 5g-23 pt pm. 50-100 c. dis 65-100 c. dis 1j-5; liredis 1j-0; pm-3dis 2j-1; c. pm 4-2 ore pm 4-5-5-50y pm	2.11 2.20 2.45 2.03 9.93 -9.54 -6.50 -1.78 1.18 3.16 4.11 12.39 5.26	9.58.0.48c.pm 7.18.1.95 c.pm 54.25 c.pm 55.000 dis 58.85 př pm 120.280 c. dis 200.500 c. dis 5-3 lire dis 23.4 ore pm 10.8 ore pm 10.8 ore pm 10.8 ore pm 10.8 ore pm	3. 3. 9. 7. -1. 0. 3. 4.
Balaium			convertible	Six month	dorum	ed dollar Q	96-0

Note Rates 2654-2754 594-6014 10.28-10.38 8.48-8.58 3.70-3.80 1,650-1,700 397-402 3.98-4.08 2.035-2.055 1007-1.017 Austria ... 1.7612-1.7662 0.8740-0.8750-Belgium ... 41.61-42.61 20.60-21.10 |Denmark 7.97-7.98 3.9420-3.9440-france ...

EXCHANGE CROSS RATES

Jan. 5.	PoundBterling	U.S. Dollar	Deutschem'k	Japan'se Yen	FranchFranc	Swiss Franc	Datch Guild'r	Italian Lira	Canada Dollar	Belgian Franc
Pound Sterling U.S. Dollar	0.495	2.020	3.738 1.850	597.5 196.7	6.555 4,234	5.330 1.649	4.055 1.999	1685. 834.0	2.392 1.184	58.80 29.11
Deutsche mark	0.268	0.540	1.	106.3	2.288	0.891	1.090	450.8	0.640	15.73
Japanese Yen 1898 -	2.517	5.083	9.408	1000.	21.53	9.385	10.16	4241.	6.021	148.0
French Franc 19	1.169	2.352	4.370	464.5	10.	3.994	4.719	1970.	2.797	68.75
Swiss Franc		0.607	1.122	119.3	2.568	1.	1.212	505.9	0.718	17.66
Dutch Guilder	0.248	0.501	0.926	98.45	3.120	0.825	1.	417.5	0.59ā	14.57
Italian Lira 1,008	0.594		2.218	235.8	5.076	1.977	2.395	1000.	1.420	34.90
Canadian Dollar	0.418	0.844	1.563	156.1	3.575	1.392	1.687	704.3	1.	24.58
Belgian Franc 100	1.701	5.435	6.356	675.5	14.55	5.663	6.862	2865.	4.068	100.

LONDON MONEY BATES

Jan. 5 1979	Sterling Certificate on deposit	interbank	Local Authority deposits	Local Auth. negotiable bonds	Finance House Deposits	Company	Discount market deposit	Treasury	Eligible Bank Buls o	Fine Trade Bills &	
Overnight	11;; 11;; 12;; 12;; 12;; 12;; 12;; 12;;	12 4-12 5 12 4-12 5 12 12-12 6 12 12-12 5 12 12-12 5	111g-1156 115g-117a 117g-12 125g-125g 121g-125g	125g-125g 125g-125g 121g-125g 12-125g 12-125g 121g-125g 12-125g	121s 1214 125s 127s 127s 127s 125s	1238	18-11) ₈ 103 ₄ -11 113 ₄ 113 ₄ -127 ₈	114	117 ₈ 12 ₁₃ -12 ¹ 9 12 ¹ 9-12 ¹ 4 12 ₁₃ -12 ¹ 4	121 ₂ 125 ₃ 125 ₄ 125	

MONEY RATES

NEW YORK

The man most likely to succeed in '79

Making the right decisions in business and personal investment is simple: you have to stay on your toes, and keep an ear to the ground.

Simple-but not easy. In fact, in the unpredictable economic climate of the seventies, making the right decisions often looks virtually impossible.

At the Investors Chronicle, we try to make it easier than it looks. Which is why, a year ago, we changed our magazine radically, to supply what every senior businessman and investor needsa decision-taker's digest.

Every Friday, we offer the facts, analysis and background that help our readers make crucial decisions successfully. Personal investment decisions. Corporate investment decisions. Business decisions.

We offer the facts: does anybody want them? Apparently, yes.

Since we changed, our subscribing readers are up 27%. Our total sales have increased by more than 1,500 a week-and the trend is still upwards.

And are we contributing to success?

of success in '79.

Again, it looks as though we are: we now have more readers earning £10,000 p.a., and more readers who are directors than any other weekly business magazine. And again, the trend is up.

If people like that find us indispensable, mightn't you? The Investors Chronicle: in your newsagents, every Friday. Pick up a copy-improve your chances

The financial weekly that really means business.

Dec. 16 | (Year ago app

Keeping up with cost Managing director of bricks and mortar of GEC-Fairchild

Arson bill

the number of fires started by

arsonists, the argument is strong for much greater vigilance and

security on the part of policy-holders, insurers and politicians.

Jan 7 on the 1979 week

TEL AVIV

IDB Bankholding , . Bank Happalim Sr.,

Union Bk. Israel Br.

United Mizrah Bank

Israel Land Dev. Br. Property & Building

BY OUR INSURANCE CORRESPONDENT

FIVE YEARS ago the Royal Institution of Chartered Surveyors began to monitor regularly the movement of house construction costs. Since then its Building Cost Information Service has been reporting monthly and its reports are carried in the magazine Building. Last week Building reported that the cost of house building had doubled in the last five years.

Prevention (No. 128) covers fires in 1977 and thuse which caused more, than £25,000 worth of damage each.

The total estimate of direct fire damage was £261m. Fire prevention reports that some files more this arose from 1,145 so-called large fires, and of this, £40m occurred in 18 fires costing more than £1m each.

This latest analysis shows that the greatest movement was during the years 1974 and 1975 and that in the last two years the increase in building costs has totalled about 21 per cent over the December, 1976, level, with last year's percentage marthe greatest movement was durlast year's percentage mar-ginally under 10 per cent. some of these, it is probable

It is reasonable to assume that between 25 per cent and 30 from this that in the same fiveyear period the cost of building shops, offices, factories and In this context last year's

provides ammunition for insurers to fire at policy-holders who neglect to revise sums insured. No one, whether a domestic or a commercial policyholder, can argue that he is not substantially under-insured if he has not made any revision in the last two years-more so it he has failed to do so over a longer period. The information justifies household insurers' wide-spread introduction of index linking and refutes complaints about inertia selling.

The institution does not

expect the movement of the index to stay below 10 per cent Hassneh Insur Br. this year. Building workers' Gan. Mort. Br. Wages will be settled in June. "Telahot" Isrl. Mig. this year. Building workers' wages will be settled in June, but already heating and venti- Land Develo Alrıca israel invest. lating workers and plumbers have received about 16 per cent, and electricians have asked for a basic 43 per cent increase. Public Utility Last year, despite continuing israel Electric Corp. pay restraint, labour costs rose by 13.4 per cent. Investment Companie Sank Leumi Invest.

The institution reckons that "Claf Israel Invest building labour costs may Commercial and Industrial increase by only 12 per cent in Alliance Tyre & Rbr. 1,225 1979, but insurers and policy- Elco Br. holders, can surely expect con-struction costs to rise by more "Ata" Textile Br. than 15 per cent this year.

From the commercial fire aspect the year 1977 is now a matter of history and though the precise final cost is not yet Fuel and Oil determined some analyses have Delek been made on a market wide Source Bank Leum; le-Israel, BM, hasis: the current issue of Fire Tel Aviv.

Mr. David Marriott has been appointed managing director of GEC-FAIRCHILD, the joint venture company formed between the General Electric Company and Fairchild Camera and Instrument Corporation, to manufacture semiconductors in Britain. A Fairchild vice president. Mr. Marriott, an Englishman, went to the U.S. in 1962 and has been with Fairchild since 1965.

The Secretary of State for Scotland has nominated Mr. J. Murray to be a member of the special panel of the TRANSPORT TRIBUNAL. He succeeds Professor D. F. Macdonald, who has been a member of the panel been a member of the panel

Mr. V. G. Ramsden, a joint general manager, and Mr. J. S. Gee, the company's actuary, will be appointed to the Board of the REFUGE ASSURANCE COMPANY as executive directors on February. damage our stems from arson.

In this context last year's direct fire damage bull—likely to be about £320m—probably means that the cost of arson rose to £80m or £100m. If existing public and private such independent information

Such independent information

damage our stems from arson.

In this context last year's February 1. Mr. J. Proctor-Pearson and Mr. R. F. Penning-ton intend to retire from the Board at the end of 1979. Mr. Proctor-Pearson has agreed to remain as honorary president of the company, Mr. R. C. Green, a the number of fire started by tormer investment secretary, has also retired. Following the retirements, Mr. W. N. Brewood, a joint general manager, will be appointed an executive director on January 1, 1930, retaining his existing position, and Mr. R. Stevenson, a joint general manager, who will be retiring in February 1920, will relinquish February 1980 will relinquish his present executive position at appointed a non-executive direc-tor from January 1, 1980.

> Mr. J. A. Franks has been appointed a non-executive commercial direct director of CORINTHIAN products division. HOLDINGS.

Mr. Jeremy Potter becomes group director of corporate affairs for LONDON WEEKAND TELEVISION on July 1 when he joins the Boards of LWT (Holdings) and London Weekend Television.

Board are Mr. E. S. Brower, Mr. M. Y. Wettreich, Mr. I. Slapper and Mr. D. Wettreich.

Mr. D. F. Ford and Mr. W. C. Reed have been appointed associate directors of J. E. SANGER.

Mr. R. Alastair Lloyd, director

Mr. K. Alastair Lloya, director of Ellerman Lides and deputy chairman of Ellerman City Liners, has been appointed chairman of ASSOCIATED CONTAINER TRANSPORTATION (ACT) in succession to Mr. H. R. ager of the IRON TRADES TRANSPORTATION (ACT) in succession to Mr. H. R. ager of the IRON TRADES

up of five shipping lines; Ben Line, Blue Star Line, The Cunard Steam-Ship Company, the Eller-man Lines and Harrison Line.

Admiral Sir John Treacher has accepted an invitation to join the Board of WESTLAND AIR-CRAFT. He was director of Naval Air Warfare from 1966 to 1968 and was involved in the Sea 1968 and was involved in the Sea King helicopter development at that time. Among his later appointments were vice chief of Naval Staff, Commander-in-Chief Channel and NATO Allied Commander-in-Chief Channel and Eastern Atlantic. He retired from the service in 1977.

Mr. Andrew C. Salvesen has been appointed a director of CHRISTIAN SALVESEN (MAN-AGERS), the senior operating company of the Salvesen group.
Mr. Peter H. Gray has been apointed a director of Christian

At MOBIL OIL COMPANY Mr. G. Broadhead has been appointed plans and programmes director ton intend to retire from the Board at the end of 1979. Mr. Broadhead has been appointed beard at the end of 1979. Mr. in succession to Mr. D. Crann, Proctor-Pearson has agreed to remain as honorary president of the company, Mr. R. C. Green, a former investment secretary, has also retired. Following the retirements. Mr. L. Fergusson, who becomes the processing of the pr deputy general manager, Mobil Oil Hellas, Athens.

> Mr. J. E. Chilcott, formerly commercial director of the rolled products division of the BRITISH ALUMINIUM COMPANY, has been appointed commercial director of the BA group, in succession to Mr. D. H. K. Rugg, who has been appointed marketing director of the group. Mr. H. R. Herrington the group. Mr. H. R. Herrington has succeeded Mr. Chilcott as commercial director of the rolled

SAVILLE TRACTORS (3 menher of the Dutten-Forshaw Group) has made Mr. John E. D. Neall managing director.

Mr. Brian D. Insch becomes general manager, commercial, of GKN Group on March 1 when he will relinquish his positions

Mr. J. A. Franks has been

TAINER TRANSPORTATION pointed assistant general man-(ACT) in succession to Mr. H. R. ager of the IRON TRADES MacLeod, joint managing direc-tor of Ben Line. ACT is made SOCIATION.

NEW '	YOR	kK -	-GW	10:-7	è		. •	· - · - · .		·.
	Jan. Jan. Jan. Jan. Dec. D				Dec.	197	8-79	Stace Co	poplat'n	
<u> </u>	Jan. 5	Jan.	Jan.	3an. 2	29	28.	High	Low	High	Liow
•Industrials	850.73	626,14	817.59	811.42	505.41	905,96	907.74 (8/9)	742.12 (32/3)	1051.70	41.22 (2/1/32)
Π'nıe Β'πα».	84,48	84.55	84,55	84,52	84,54	84,71	50.86 (4'1)	84.55 (5/1/70)		
Transport	217.87	217,25	214.55	210.17	286,56	206,95		199.31	279.88 (7/2/69)	12.23 (817.32)
Utlities	701.39	101,08	100.37	99,19	58,24	98.14	110.96 (3/L)	97.75 (20/12)	165.32	10.58
Institut tol. 000's†	28,568	88,400	23, 190	18,380	30 030	25,440	-		- .	-
o Day's bigb	857.26	low 82	3.89							_

· Ind- div. yield %		6,03	-}-	6.00	1.	6,02	; 	5,54	
				-					
4 FT 4 TT 4 FT TOOMS									

			Jan. Jan. Der. 3			197	B-79	mpilat'ı		
	Jan. 5	12h	an.	зап. 2	29	28 28	High	Lux	High	Low
ludustrials	110,48	109,92	109,08	107.91	107-21	107,41	118.71	95,52. (6/3)	134.64	8.53 (30)6/32)
industrials Conqueite	59,18	98.56	97.8D	26,78	96,17	96,28	108.98 (12.09)	85.90 (6/3)	125.85 (11/1/63)	4.40 (1,6,32)
			3,	ın, 3	Dec.	27	Dec. 2	O į Y	ear ago (s	(-broz-)

'!	1 1	1 1	; tribat 1 to	(P) (TT) (PO) TD(PS)
	Jan. 3	Dec. 27	Dec. 20	Year ago (approx-)
al. div. Field 🖫	5.04	5,10	5.21	4,90
nd. P/E Bazin	8.84	8,74	8.55	9.13
ong Goy, Bond yield	8.95	8,92	8.95	8,02
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	M.Ý.	.EA	TT C	этхо		·	_		· Ka	es and Į Jan.		s lan. 4 j	Jan. i
	Jan.	Jan 4	Jan.	뺡	197 Blgh	18-79 Low		mer Tr		1,90	-61	1 905 1231	1,894 1,352
	65,41	55,05	54,57	55.95	80,59 (11/9)	48.5 (6/3)	7 Li	ils change or High	M	36	35	336 338 . 37	265 277 21
	MON	TREA	L.	- 1	١. ١			e. Low	<u> </u>		1978	19 -79	15
;					Jan. 5	Jan. 4	4 3 2 High			Righ	Ţ	Low	
	l		lustris. mbloe			224.71 230,32		219,18 225.80		2 (5/1/ 5 (6/1/		152.90 170.82	
		<u> </u>	Compo		1845.0	1338,5	135).2	1816.8	1645.	0 (5:1)	790	998.2 (30/1:
٠	JOHA	Go	SBUR ki duntris		250.8 274.7		250.0 271.0	259,5 270,5		(14.8) (1/11)		189.0 r: 184.9 r	
-			Jan. 6	Pre-							Pre-	1 <i>918</i> .3 High	1972 Low
ļ	Austr	lia(T	551.87	548.7	5 566.? 122.6	9 411.1	9 Sp	ain	(d) 9:	.50 S	6.08	98.79	95.50

L: :	- 6	41003	ugra.	LLOW		ь	vious	Hilli	<u> </u>
Australia(%)	55L87	548.75	566.79 (22/9)	411.19	Spain (d)	95.50	96,08	98.79 (2/1/79)	
Belginn (n	99.15	99.07	101.18		Sweden (c)	273.2 6	366.24	408.08 (4/5)	32
Donmark(**	88,44	88,47		(30,10)	· Switzerid(/)	296.1	296,3	323.7	ģ
France (ff)	76.8	76.2	83.0	47.6 G/20	Dec. 1953.	88 A	meterdi	am Inc	
Germany(;;)	826.40	825.50		759.4	1970. 11 H	ang S	eng B	lenk 31 teliane	1/
Holland (65)	81.S	81.9	95.1 (11/9)	76.0		ww .SE	4/1/0		St
Hong Kong		507.19	707,70	383.4	30/12/77. e S	tockho	im Ind	ustrial 1	1/1
Italy (11)	70.02	69-21	(4/B) 82.25	(13/4) 55.45	apie.	к Соц	poration	. ±U	пч
Japan (a)	459.34	452.85	(25/9) 468,34	(10/1) 264.04	ESHDAVIC	A CTIV	E CT	CVE	

i] [[(D)\(18) (H)(U)	LINDAL 3 MOLLES STOCKS					
ı	Singapore(8) 355.41 353.32 414.50 252.0		C				
i	(8/9) (9/1)	Stocks	Closing				
		traded	price				
	indices and base dates (all base	Art. Home Prd. 614,500	23				
ı	values 100 except NYSE All Common-	Revion 449,100					
ļ	50; Standards and Poors-10; and	Occidental Ped. 325,500					
	Toronto 300-1,000: the last named	Detere 265,100	381-				
1	based on 1975). † Excluding bonds.	U.S. Steel 240,300					
i	± 400 industrials. § 400 industrials, 40	Ежол 237.500	50 ¥				
J	Utilities, 40 Finance and 20 Transport.	Min. Mg. & Mtg. 228,100	1 65 T				
	1 Sydney All Ordinary. Belgian SE	Polaroid 212,300					
į	31/12/63 ** Copenhagen SE 1/1/73.	Boeing 210,600					
•	31/12/63. ** Copenhagen SE 1/1/73. tt Paris Bourse 1961. ## Commerchank	Duke Power 209,400					

EUKU	PE		-				
AMSTERDAM				, BRUSSELS/LU	JXEMB	OURG	
Jan. 5	Price + or	Div.	Yid.	Jan. 5	Price	+ o:	.
Ahold (FL20)	117.1—0.3 30.3	:18	4.8	· · · · · · · · · · · · · · · · · · ·	Frs.	\ <u> </u>	1
Akzo (F1,20:) Alg'm Bk (F1 100)		A234	6.4	Arbed	2.220	L	·
AMEY (F).10)		500	5.5	Bekaert "B"	. 2.620	;÷10	'n
Amrob k (F1.20)				C.B.R. Cement.		i+8	1
Bijenkorf	86 -1	26		Cockerill	482	+6	Ī
BokaW stm:FI20	117.0-0.5		6.8] EBES	. 2,405	}÷5	1
Buhrm' Tetter'.			7.1	Electrobell,		<u>,-10</u>	
Elsevier (F)20,	2822	27.5	2.0	Fabrique Nat		+ 15	1
Ennia N.V. B'rer	142.8 + 0.8			G.B. Inno Bm		-30	1
EurComTstrFt10	67 -3.4	94.5	5.2	Gevaert			
Gistal Br'cad Fi	āġ -⊷Q.2	20	5.1	GBL (Brux L∤	- 1,630	(+ 10	_ '
Heineken (F125)	390.2 95.60.4	14	3.7	Hoboken		<u>'—30</u>	1
Hoog'ns (FI-20)1				Intercom,	. 1,880	į+5	1
HunterD.(Fl.100)			5.3	Kredietbank	. _! 7,0 5 0	1+50	2
K.L.M. (FJ.100)	121.2 + 0.4	1 2:0	2.5	La Royale Beige	6,150	+ 100	43
Int. Muller/Fl.20	47.2:+0.1		8.6	Pan Holdings	2,700		S
Nat-Ned InsFi10	109.1-0.2		4.2	Petrofina		ļ	,33
NedCr'dBkF1.20	58.7: ± 0.7		7.4	SOC Gen Bangue	₹ 3,30 5	—15	
NedMidBk(Fl.70		22 1	5.1		2,040	<u>,</u> _5	12
Oce :F1.20;	168 + 1.5		4.3	Sofina Solvay	.¦3,500	+60	2
OGEM (FL10)	29.5-0.1			Solvay	2,450		٨.
Van Ommeren			7.8	Traction Elect.		+ 25	11
Pakhoed (Fi,20)	162 +3.5 48.2 +0.6	-!	- 1	UCB		<u>'-10</u>	ł.
PARIOED (FI, EU)	24.7'-0.7		- i	Un Min. (1/10)		+ 14	
Philips (Fl. 10) RinSchVer(Fl 100			6.9	VieilieM'ntagne	1,580	- 60	ı
	58.0,-0.5 165.5 ÷ 0.5		=- 1				
Robaco (F1,50)			6.8	COPENHAGE	И÷		
Rorento (FL50)	128 +0.4		£ . {				
RoyalDutchFl20	182.4-0.2				Price	+ or	į C
	122.1 +0.2	00./2	6.8	Jan. 5	Kroner	I — 1	i i
Slavenburg Tokyo Pac Hidas	240.5 + 0.5 127.5	S0.50	g.5		 	;——	-
	127.5	DILDU,	유.	_	l i	i _ I	
Unilever (F),20).	123 +0.2 40.0	42.0	7.0	Andelsbanken	1393,	-L4	1
Viking Res	40.0;4 415.0;+2	20770	4-2	Danske Bank	1223	—,7≤ ¦	1
Mastrott. HAbox	#10.0i+X	33	3.9	East Asiatic Co.	15151	+114	1
-		<u></u> _	I	Finansbanken	133	+4	1
VIENNA			. [Bryggerier	323	-1	1
	<u> </u>	-	ł	For Papir	75	—1 ₂	١.
1	Price +-or	Div.	73 <u>6.</u> \	Handelsbank	125		

EM (F] 191 n Ommeren khoed (Fl,20) llips(Fl,10) iSchVer(Fl10) beco (Fl,50)	162 48. 24. 58.	5:-0.1 +3.5 2:+0.6 7'0.7 0:-0.5 5:+0.6	17	- -	UCB	1,184 738 1,580
inco (Fl.50) rento (Fl.50) valDutchFl20 venburg	128 182,4 122.1	+0.4 +-0.2 +0.2 5+0.5	5 19,3 56.75	3.8 8.8	Jan. 5	Pric Kron
tyo Pac Hids ilever (F),20). ing Res st. Utr. Hypok	127.9 123 40.0	5	SQ.30	0.6	Andelsbanken Danske Bank East Asiatic Co. Finansbanken	139 122 131 133
NNA	·		-	·	Bryggerier For Papir	323 75
Jan, 5	Price	+or	Div.	¥ਮਰ. %	Handelsbank G Nthn H (Kr90) Nord Kabel	
ditanstalt imooser ecta	342 270` 575 75	+2 -1	10 9: 38	2.9 3.3 8.4	Novoind'stries B Oliefabrik Privatbank Provinsbank	214 122 130 139
r Daimler Magnesit	200	+1	8e 10	4.0	Soph.Berensen. Superfos	358 164

SPAIN V	· ·	TOKYO ¶
January 5	Per cent	I ————
Asland	117 —	Jan. 7
B. Atlantico (1,000) .	242	Acabi Class
Banco Central	270 — 6 270 — 6	Asphi Glass
Banco Exterior	270 – ∙6	Casio
Banco General	235 — 300 —	. Chinon
3. Granada (1,000)		Dai NipponPrint
Sanco Hispano	219 6	Fuji Photo
3. ind. Cat. (1,000)	.165 . —	i Wittechi
3. Ind. Mediterraneo	184 - 2	Honda Motors
Banco Madrid	212 —	House Food
anco Popular	208 — 6	C. Itoh
. Santander (250)	307 – 9	C. Itoh
Sanco Urquijo (1,000)	250 - 4	Jaces
anco Visceya anco Zaragozano	217 - 6	JAL
sanco Zaragozano	228	Kansai Elect.Pw
Senkunion	140 161 6	Komatsu-
Banus Andalucia Babcock Wilcox	161 — 6 25 —	Kutiota
SOCOCK WINCOX	106	Kyoto-Ceramic.
)ragados	184 — 7	Matsushita Ind.
nmobanif	73	Mitsubishi Bank
. I. Aragonesas	33	Mitsubishi He'w
spanola Zinc	99	Miteralian Comm
xpl. Rio Tinto	40 - 4	Mitsui & Co
ecsa_ (1,000)	53.50 + 1.50	Mitsukoshi
enosa (1.000)	55 -	Nippon Denso
al. Preciados	43	Nippon Shinnen
rp. Velazquez (400)	165	Nippos Shinpan Nissan Motors
lidrola	54.50 + 1.75	Ploneer
berduero	55.75 + 2.25	
Harra	62 — 3 38 —	Sekisui Prefab.
apeleres Reunidas	38	Shiseido1
etroliber ,	112	Sonv
atroleos	140 0.50	Taicho Marine
artio Papalera	39	Takeda Cham
ipi808	46	TDK
ogefisa	130	
elafonica	69 + 3	Teijin Tokyo Marine
arras Hostench	69 - 3	TokyoE(act Pow)
ubacex	56 <u> </u>	Tolom Come
nion Elec	58.25 + 3.25	T

arduero arra peleras Reuni goliber voleos rrio Papalera iace gefinas jefonica rras Hostenc bacex lon Elec.	das	55. 62 38 112 140 38 46 130 69 56 58.	5 ÷	0.50 3 3 3 5 3.25	Sanyo Ete Sekisui Pr Sekisui Pr Shiseido Sony Taisho Ma Takeda Ci TOK Tokyo Mar Tokyo San Tokyo San Tokyo San Tokyo San Tokyo San Tokyo Mar
Jan. 5	Price Kronor	+ or	Div.	Yid.	Source
A AB (Kr. 40). a Lavai(Kr.50	146	+6	5 5	2.4 3.4	HONG
EA(Kr.50) RECo co Kr25 erud	112	+2	6	6.2 5.4	Hong
OFS	114	+1	94	3.5	Amaigama

	Jan. 7	Yen		8	. ?:
	Asshi Glass		<u>_1</u>	14	2.
	Canon		— 1	12 25	1.
	Chinon	885 368	-2	20	2
	Dai NipponPrint		~ 5	18	l ī.
	Fuii Photo	692	÷34	15	1
	Fuji Photo Hitachi	266	+4	12	2.
	Honda Motors	480	+3	18	1.
	Honda Motors House Food	1,060		35	1.
	C. Itoh Ito Yokado:	254	+12	12	1.
•	TTO YOKAGO	1.760		30 13	0.
	Jaces	2 020	+30	13	1.
-	Kansai Elect.Pw	1.243	+30	10	Ō.
	Komatsu	380		18	ž.
1	Kubota		-1	15	2.
	Kyoto-Ceramic.	3.610	-40	35	ō.
•	Matsushita Ind.	704	3	20	ı.
	Miterbiehi Rank	785		10	1.
	Mitsubishi He'yy	183	-1	12	4.
	Mitelthichi Coun	411		13	1.
50	Mitsui & Co	290	اا	14	2.
30	Mitsukoshi Nippon Denso	1 410	2 10	20	1.
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75	Pioneer Sanyo Eletric Sekisui Prefab.	1.850	+60	48	1.
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	201261GO	L.160		20	0.
50 I	Sony	1,760	+50	40	1.4
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- (Takeda Chem	720	-10	15 30	0.4
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- 1	Tokun Flant David	1 120	+10	-12	4.
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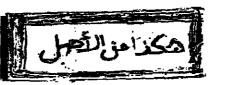
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2034 443 ₄	15.5 281	Allied Chemical	50	371	· 25	Deere	381a
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37% 641 ₂	28 is	Amer. Stores	321-	32% 18%	. 14%	E. G. & G El Paso Nat. Gas.	291a 1614
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51 s	431-	Ati. Richfield	51 575:	405g 16 325g	. 127	Firestone Tire	121 ₂ 273 ₄
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29 4 3912	22.9	DAISK MINERICA	20.7	511 ₂ 231 ₄	. 17	Ford Motor	4554 1986
291 ₂ 495 ₅ 281 ₂	22	Bankers Tr. N.Y Barber Oil Baxter Travenol. Beatrice Food		3918 1114	275a	Foxboro Franklin Mint	323; 6
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973 ; 45 ;	5 55:3	Bulova Watch.	6:4 38:-	81,	223	Gen. Tel. Elect. Gen. Tire	
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INTERNATIONAL BONDS

BY NICHOLAS COLCHESTER

Christmas hides dollar blues

WHILE THE champagne flowed Euro-issues and is testering on

improvement in the background to the market last week. The dollar held up, U.S. short-term rates fell a little and the U.S. bond market perked up a bit. But the prevailing feeling in whereas the ECSC Eurobond the market remained that these 9 per cent, 1993, gave only of 9.99 per cent. This is the movements were irrelevant to 9.55 per cent—both for approximately the underlying trend and prices mately ten years of Eurodollar bonds dropped by At the shorter and of the about 4 per cent over the week. market the yield differential in the Deutsche Mark sector.

The Ventranthand market is herman the function Yankee for it was a quiet week with mixed.

the dollar sector of the inter- the brink of 16 per cent for the borrower was 0.48 per cent in were up in general: liquidity is shorter instrument was the national bond market pulled off best borrowers. Kuhn Loeb favour of the Yankee.

a stealthy correction of some Lehman, which compiles lists of On Wednesday Kuhn Loeb seasonal boost from coupon pay perhaps because the customary

cal Eurobond for the same and primary markets.

magnitude. The new issues in comparative yields, pointed out December for the prime bor. The attractive returns available for \$100m five-year Yankee bond pean Coal and Steel were of the week; the EIB Yankee priced to yield \$38 per cent, 1992, offered a yield \$38 per cent, 1992, offered a yield \$48 per cent, 1992, off

priced to yield \$.55 per cent and \$1 per cent, 1952, onered a yield coupon of 9.75 per cent, paid 9.44 per cent respectively. At to average life of 9.96 per cent semi-annually, which would be their new year prices they yield 9.82 per cent and 9.26 per cent semi-annually, which would be their new year prices they yield 9.82 per cent and 9.26 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent and 9.86 per cent semi-annually, which would be their new year prices they yield 9.82 per cent and 9.86 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually, which would be their new year prices they yield 9.82 per cent semi-annually yield 9.82 per cent se

The Yankee band market is between the five year Yankee for it was a quiet week with mixed still showing the way to fire Australia and an almost identi- results in both the secondary

for credit, and there was a better tone in the domestic bond market. One exception was the recent issue for the European Investment Bank which slid to

971 from its issue price of 99. Among the new issues the magic appeal of the big American bank was in evidence again in the reception given to the DM 70m issue by American Express International. Demand for this was strong, despite the fact that it is a subordinated debenture. On the other hand, the six-year note and 10-year bond being sold by Westdeutsche LB for Denmark faced particularly, it seems, on the

Prices part of Swiss investors.

Zealand. Deutsche Bank will also launch a DM 100m public issue for an unnamed borrower. The pervading gloom about

the dollar has not helped the Swiss foreign bond primary market where the main problem is the reluctance of borrowers to expose themselves to the franc. There was not one public bond issue in December and the start of the year looks fairly thin with an ICI refinancing and issues for New Zealand and the Asian Development Bank the only features on the schedule. Some bankers now feel that a

really good borrower could get away with 3.5 per cent. All this good news for holders of existing bonds where prices bounded up last week by an average of 12 points. BY JOHN EVANS

CURRENT INTERNATIONAL BOND ISSUES Av. life Years U.S. DOLLARS §BBC Brown Boveri Finance 1993 **UBS** Securities S.G. Warburg TECSC 1999 ††Bank fuer Gemeinwirtschaft Finance Co. BY European Banking Co. 1993 1983 202 First Baston Corp. **ind. Bank of lapar Morgan Stanley 79 TOO CCF, Man. Hanover Ltd. 1984 †Pemex 1984 Kuhn, Loeb, Lehman Bros. ††Norway **D-MARKS** §Omron Tateisi Elec. WestLB Union Bank of Finland ‡Norges Kommu (g'teed Norway) 150 1989 7.5 WestL₿ Deutsche Bank *Sorrente BY American Express Banking Corp. 100 Dresdner Bank 1985 1989 WestLB Denmark †Finland **İFinland** 1988 7.02 **SWISS FRANCS** Norges Hypotekforening for Naeringslivet 1994 100} Nordfinanz-Bank Zurich KUWAITI DINARS (g'teed Finland) Not yet priced. ‡ Final Lenius. Set 11 Registered with U.S. Set Note:

EUROCURRENCY LOANS

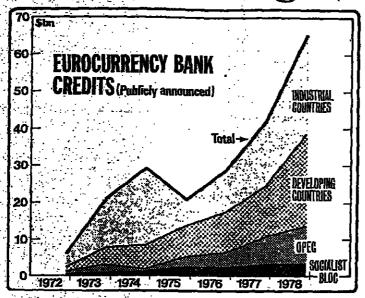
Japan spearheads rising loan volume

syndicated bank loans raised in 1978 ballooned to a record gross level of \$65.460, up from the 1977 figure of \$11.760. But last year's debt totals are particularly

misleading.
The grand total disguises a heavy amount of refinancing of past loans or related debt restructuring by a wide range

of borrowers In fact, Euromarket bankers calculate that as much as one quarter of the lotal may be attributable to refinancing, leaving net new syndicated lending at between \$45bn-\$50bn.

While many of last year's refinancing operations are welldocumented, like the British Treasury's restructuring of its. \$1.5bn syndicated facility in July, the task of statistically sifting all refinancings is particularly hard. Many corporate borrowers in the Euromarkets, as well as national governments,



restructured their international to take advantage of the terms away from the lending debt, often completely privately, remorseless shift in market banks.

recent Financial Market Trends publication, calculated that such

operations amounted to onequarter to one-third of all Euro-

1978, which were running at an annual rate of \$51.9bn in that cuarter. Taking gross figures, the industrial countries again industrial countries again account for the largest single chink of last year's syndicated borrowings, with \$26.6bn or 40 per cent of the total, according to Morgan Guaranty's latest World Financial Markets.

The industrial nation's borrowings were responsible for a similar proportion in 1977. But, refinancing excluded, there was a sharp reduction in

governmental borrowing within the OECD area last year. This is thought to reflect less demand for balance of payments financing, as the OECD bloc has moved into an estimated current account surpius of \$85n last year, compared with a deficit of \$120n in 1977. Among major national OECD borrowers. Canada made the

heaviest calls on the international markets, with a total of \$5.7bn.
This high rate of borrowing matched the well-documented problems of the Canadian

economy and dollar. At the same time, Scandinavia -an area with its own economic stresses—continued to use the syndicated markets substan-

Danish DOTTOWISE The developing nations' Euromarket loans totalled \$25.1bn last year, or 32 per cent of gross

Mexico emerged as the main nation to tap the markets, with \$7.1bn, reflecting the need for larly for its new oil industry, as well as the recovery pro-gramme in the wake of the economic crisis of the mid-1970s. The OPEC states' borrowings jumped sharply, to \$10bn from

This trend in part mirrors the increasing balance of payments restraints on many of the oil

of European lending.

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ļ	1. Bank of Tokyo	24.3	, 97
ĺ	2 Citicorp	24.1	113
7	j 3. NatWest	23.1	75
	4. Chase Manhattan	· 21.5	116
	5. Terente-Dominie		60
,	6. Bank America	16.5	72
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1	of Japan	16.2	57
Н	8. Bankers Trust	15.9	· 56
ī	9. Manufacturers		
	Hanover	15.6	63
ì	10. Lipyds Bank	15.3	57
1	11. Chemical Bank	14.8	· 57
1	12. Sanwa Bank	14,6	46
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ì	21. UBS	72.8 ·	35
ł	22. Fuji Bank	12.7	34′
ĺ	23. Barclays Bank	<u> </u>	42
ı	24. Dresdner Bank	12.5	32
ł	25. Commerzbank	12,3	36

U.S. BONDS

BY STEWART FLEMING

Signs of calmer conditions

credits raised in third-quarter AFTER THE losses suffered by investors and traders in Wall Street's bond markets in the last months of 1978, the first week of the new year has come as a welcome relief.

> Bond prices generally firmed after a weak first day's trading last Tuesday and short-term interest rates have, for the time being, halted their dizzving upward spiral. There have been declines of between five and 10 basis points (100 basis points equals one percentage point) in interest rates across most money market instruments, with three-month commercial paper, for example, yielding 10.45 per cent at the end of the week and six month prime bank 11.40 per cent, according to estimates by Salomon Brothers. feared.

Through the week the price of long-dated Treasury issues

short-term money markets have declined. been one factor in the market's favour. After two weeks, during which the interest rate on Federal funds swung violently day to day under the impact of end-year balance-sheet adjustments, stability appeared to be returning to this key short-term. money market through which the Federal Reserve Board

implements its monetary policy. There had been fears that behind the gyrations in the Fed funds' rate lay yet another tightening of credit. But on Thursday the Fed waited until Fed funds were trading at 916 before draining reserves, for the funds' rate is still about 10 figure which some higher

The money markets have been reassured, too, by the slowing rose by up to half a point as in the growth of the money the market firmed, but prices in supply in the past three months the corporate bond sector were over this period. According to

The calmer conditions in the money supply measure M1 has U.S. Government still had to

J.S. Securities and Exchi Note: Yields are calcula

Some suspect that this may be due to banks paying interest on demand deposits and the flow of funds into such deposits and out of the M1 category. But broader money measures, too. are slowing for the time being.

As Chase Manhattan Bank says, few market participants are expecting this slower growth to be maintained for long. On the other hand, some analysts, including Dr. Henry Kaufman, of Salomon Brothers, sees in the fact that the Fed has not eased monetary policy in response to slower monetary growth and a firmer dollar, signs of a stricter monetary policy stance by the certificates of deposit yielding per cent, and not a sharply Fed. At the moment, however, with fourth quarter growth, predicted by the Carter Administration to be close to 5 per cent. the Fed can afford to err on the side of firmness in support

> In spite of the rise in prices 1984 and rated triple A by in the Trezsury market, the Moody's on Thursday.

of the dollar.

offer investors record returns last week on its latest financing. On Wednesday, one year Treasury bills were sold at a discount which offered investors an equivalent yield of just over

101 per cent, and on Thursday the Treasury sold 15-year bonds at a yield of 9 per cent. But this was between 10 and 15 basis points below the yield expected earlier in the week. In the coming week investors

will focus on Thursday's announcement from the Commerce Department of producer price indexes for December and on Friday's report on the employment situation for that month. On Friday of last week the Federal Reserve confirmed the continued underlying strength of demand for credit late last year in its report that consumer credit rose by \$4.1bn that month, the highest since June 1978. In the markets, Norway is due

to sell \$100m of notes due in

FT INTERNATIONAL BOND SERVICE

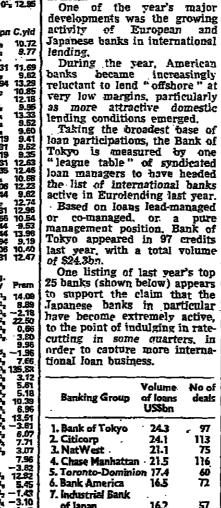
The list shows the 200 latest international bonds for which an adequate secondary market exists. The prices over the past week were supplied by. Bondtrade: Kredisthank NV: Credit Commercial de France; Credit Lyonnais; E. F. Hutton Services SABL: Commercial Ag: Deutsche Beak AG: Westideutscher Landesbank Girozentrale: Banque International: Luxembourg: Krediat Bank Luxembourg: Algemene Bank Nederland NV: Pietson. Heldring and Pierson: Credit Suisso, Swiss Credit Benk: Union Benk of Switzsafand; Aktoyd and Smithers; Benkers Treat sharmational; Banque Franceise de Credit International; Criticorp International Benk: Delve Europe NV; Deltac Trading Company. Dillon. Read Overseas Corporation; EBC: First Chicago: Goldman Sachs International Corporation: Hambons Bank; IBJ International; Hill Samuel and Co.; Kidder Peabody International; Mertill Lynch: Morgan Stanley International; Nesbitt Thomson: Salomon Brothers International; Samuel Montagu and Co.; Scandinavian Bank; Streuss Turnbull and Co.; Sumitomo Finance International; S. G. Warburg and Co.; Wood Gundy.

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· No information available—previous day's price. + Only one market maker supplied a price.

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of Japan	16.2	57
8. Bankers Trust	15.9	56
9. Manufacturers		
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11. Chemical Bank	14.8	57
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13. Westl.B	14,6	57
14. Tokai Bank	14.5	56
15. Deutsche Bank	14.3	57
16. Morgan Guaranty		53
17.8NP	13,8	40
18. Royal Bank of		• •
Canada	13.4	49
19. Mitsul Bank	13,1	44
20. ABN	12.9	32
ZI. UBS	72.8	35
22. Fuji Bank	12.7	34′
23. Barclays Bank	12.7	42
24. Dresdner Bank	12.5	32
25. Commerzbank	12,3	36
Source: Capio	an intern	ations/



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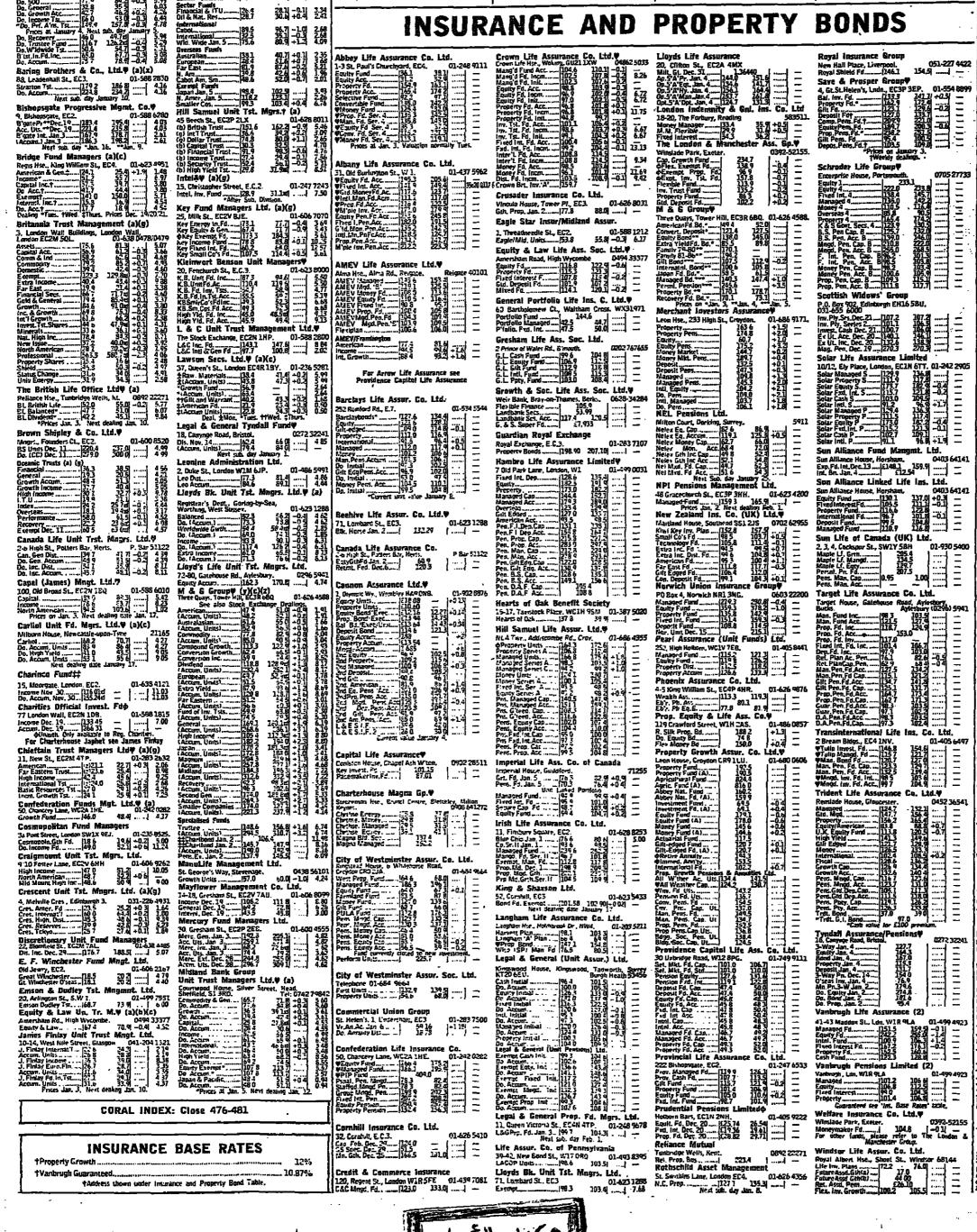
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(7) 70. 73 4 -0.1 844 943 Pelican Units Admin. Ltd. (9)(x)145.2 48.6(-0.4) 5 98 48, Hart St., Henley on Thames
P'peusaiGp.Gth. _____|44.2 Target Tst. Mingrs. Lid. (g) Ulster Bank® (a) Guardian Royal Ex. Unit Mgrs. Ltd.

Royal Exchange, EC2P 3DN 97.2 -0.5 4.32

Henderson Administration® (a)(C)(q)

Fernier UT Admin, 5 Rayleyn Road, Hutten, Royal Hutten, Sector Funds Commodity ()232 3523] 39.5[-0.2] 6.07 Archway Unit Tst. Ngs. Ltd. (a)(c) 517. High Holborn, WCIV 7NL 01-831 6233 Archway Fund | 82.2 87.4 41 | 6.22 Fnos at Jan. 4. Next sub. 6ay Jan. 11. | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178.0 | 178. 83.8 +0.6 - 4.07 74 6 +0.2 1 93 761m +0.6 3.29 Practical Invest Co. Ltd. (y)(c) Waring Street, Belfast. (b) Uister Growth |36.8 Unit Trust Account & Mgmt. Ltd. 01-623 4951 Barcleys Unicorn Ltd.**9** (a)(c)(q) Provincial Life Inv. Co. Ltd. Corn Ho. 252, Rominard Rd, E7. 01-534-5544
Corn America: 111-8
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Aust. Inc. 593 41,9 +03 11-4
Aust. Inc. 593 41,9 +03 11-4
Aust. Inc. 593 41,9 +03 11-4
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Evenpt I St. 111-1 115,7 +03 6-Wieler Grawth Fund Prudi. Portfolio Mngrs. Ltd. (a)(b)(c) 01-623 495 Exempt Tst...... Extra income 33 23 Holborn Bars, EC2N 2NH. 01-405 9222 Prudential ______|128.5 136.5| -1.0| 4.77 28.11 -0.11 3.34 30.51 +0.41 2.41 BONDS INSURANCE AND **PROPERTY** 40.7] +0.1] 2.35 51.6; +0.7] 3.68 87.6] -0.2; 5.21 42.6; +0.6] 1.96 52.0] -0.7] 2.01 Abbey Life Assurance Co. Ltd. Crown Life Assurance Co. Ltd. Crown Life Hse., Woking, GU21 1XW 04862 5033 01-248 9111 oring Brothers & Co., Ltd. (a)(x) Leadenhall St., EC3. 01-588 2830



**After Sub. Division.

**Xey Fund Managers Ltd. (a)(g)
25, Milk St., EC2V BJE.

**Comparison of Communication of Communicati

Kleinwort Benson Unit Managers 20, Fenchurch St., E.C.3.

The Stock Exchange, ECZN 1HP. 01-588 2800 L&C Inc. Fd. 143.1 147.6 8 84 L&C Incl & Gen Fd 97.7 100.8 2.02

Lleyds Bk. Unit Tst. Mingrs. Ltd. 9 (a)

Registrar's Dept., Goring-by-Sea, Worthing, West Sussex. 01-523 1288

45 Beech St., EC2P 2LX
(b) British Trust ______ 151.6
(g) Int'l Trust ______ 36.6
(g) Dollar Trust ______ 174.8

intel♣♥ (a)(g) 15, Christopher Street, E.C.2. Intel, Inv. Fund [28.9] *After Sub, Divi

Bridge Fund Managers (a)(c)

Britannia Trust Management (a)(g)

31.9 31.9

The British Life Office Ltd9 (a)

Brown Shipley & Co. Ltd.

ordon Wal! Buildings, London Wall, on EC2M SOL 01-638 0478/0479

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503 -0.2 4 17 34 0 4.91 34.3 2.58

01-600 8520

38.55 4 50.55 50.56 4 50.55 50.56 4 50.55 50.56

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1843 83.8 ±0.1 10.5 64.0 12.57 114.4 ±0.5 5.61

agement Ltd.♥

INSURANCE BASE RATES 12% †Property Growth ...

†Address thown under Insurance and Property Bond Table,

...... 10.87%

41-43 Maddov SL. Ldn. WIR 9LA 01-499 4923 Managed Fd. 151-5 159-5 -0 1 --Equity Fd 2422 255-9 -1-4 --Intal. Fund -- 100-9 10-3 +1-4 --Flive Interst Fd 167-2 176-1 -0-2 --Property Fd 1525 160-6 --Cash Fund -- 122-3 128-8 --

Winslade Park, Exeter. 0392-52155

Moneymakor Fd. ... | 104.8 | -0.1 | -.. |
For other lands, please refer to The London & Manchester Group.

Windsor Life Assur. Co. Ltd.

Royal Albert Hse., Shoet St., Windsor 68144

Life Inv. Plans ... | 72.2 | 74.9 | ... |
Future Assid Gibia? ... | 44.00 | ... |
Future Assid Gibia? ... | 44.00 | ... |
Feet. Assid Gens. ... | 526.10 | ... |
Fles. Inv. Growth ... | 100.2 | 105.5 | ... |
Fles. Inv. Growth ... | 100.2 | 105.5 | ... |

Vanbrugh Life Assurance (2)

Met asset value Jan. 4.

Alien Harvey & Ross Inv. Mgt. (C.L.)

1. Choring Cross. St. Heller. Jsy., C.L.

AHR Gilt Edg. Fd. [E10.25 10.28] [11.96

Arhsuthnot Securities (C.L.) Limited 1. Charing Cross. St. Heller. Jersey. (I.L.)

Arhsuthnot Securities (C.L.) Limited 1. Charing Cross. St. Heller. Jersey. (I.L.)

Arhsuthnot Securities (C.L.) Limited 1. Charing Cross. St. Heller. Jersey. (I.L.)

App. Box 284, St. Heller, Jersey. (I.S. 10.08.24)

Cap. Tst. (Jersey). (II.S. 11.95 10.08.24)

Best dealing date January 9.

Gov? Secs. Tst. 100 10.08.24

East & Int. Tst. (C.L.) 195 10.08.24

East & Int. Tst. (C.L.) 195 10.08.24

Australian Selection Fund MV

Research Condess Tst. 17.82

First Int. 11.08.24

Kiege & Shazzon Majra, (I.L.)

Charing Cross. St. Heller, Jersey. (I.L.)

Coll. Assets Cap. [139.75 139.80]

Cert. Assets Cap. [139.75 139.80]

King & Shazzon Mgyr. (I.L.)

Charing Cross. St. Heller, Jersey. (I.L.)

Gilt Fund (Jersey). [8.8]

Edg. Trust (J.D.) (J.D.)

Gilt. Food. Guernery (9.14 9.105.1)

Ent. Sirv. Secs. Tst. First Int. 10.108.24

East String Cross. St. Heller, Jersey. (I.L.)

First String Cross. St. Heller, Jersey. (I.L.)

Revit dealing date January 11.

Australian Selection Fund MV

Australian Selection Fund NV Bank of America International S.A. inque Bruxelles Lambert
Rue De la Regence B 1000 Brusse
ma Fund LF [1,888 1,946] Barclays Unicorn Int. (Ch. Is.) Ltd

Barclays Unicorn (nt. (i.o.Mae) Description of the control of the co Britannia Tst. Mngrat., (CI) Ltd. --30, Bath St., St. Heller, Jersy. 0534-73114 30, Bath St., St. Heller, Jersy.

Sterling Denominated Fds. Growth Invest 35.8 Intri. Fd. 81.7 Sterling Denominated Fds.
Growth Invest. 155.8 38.8s -0.22 200
Intri. Fd. 88.7s 188.3s +1.9 1.00
Jerséy Energy Tst. 118.2 127.8s +3.8 1.50
Univel. STyt. Sta. 52.12 2274+0.04 109
High Int. Sug. Tst. 60.95 0.96s 12.50 Value Jan. 5. Next dealing Jan. R. Brown Shipley Tst. Co. (Jersey) Ltd. utterfield Management Co. Ltd. P.O. Box 195, Hamilton, Berninda Buthress Equity SUSZJI 2 39 1.79 Buthress Income SUSZJI 209 6.01 Prices at Dec 1 Nem sub. day Jan. 8. For Capdirex SA see under Keyser Ullman

Capital International S.A. Charterhouse Japhet

Cornhill Ins. (Guernsey) Ltd. DWS Deutsche Ges. F. Wertpapiersp Detta Group utscher investment-Trust

Fore Street, EC2 01.588 708: Eng. Ass. Sterling 15133 51.35 — — — — Wardgate Cm Ferr 210.34 11.35 — — — — Wardgate Cm Ferr 210.34 11.35 — — — 10. Then dealing Jan. 31. Europoint Holdings N.V.

F. & C. Mgmt. Ltd. Inv. Advisers Fidelity Mamt. Research (Jersey) Ltd., Waterioo Kse., Don St., St. Heller, Jersey, 0534 27561 First Viking Commodity Trusts
10-12, St. George's St., Dougles, J.e.M.
10-14, St. George's St., Dougles, J.e.M.
10-14, St., George's St., Dougles, J.e.M.
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13-01 Free World Fund Ltd.

Gartmore Javest. Ltd. Ldn. Agts. Gartmore Invest. Ltd. Ldn. Agts.

Z. St. Mary Ase, London, EC3. O1-283 3531

Earhore Fund Mapt. (C.I.) Ltd. (a)(b)

41, Broad St., St. Heher, Jersey
Gult Fund (July)

1503 Hutchison, Her. 101 Harcauri Ry. H. Morg
H. S. Pat. U. Tst. 3, 710

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Hill-Samuel & Co. (Guernsey) Ltd. hight Centre, Hoos Kong
HIS296 41
HIS296 41
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OVERSEAS FUNDS Keyser Ulimann Ltd. Linyds Bk. (C.1.) U/T Mgrs.
P.O. Bon 195, St. Hellier, Jersey. 0534 27561
Linyds 7st. O'Sens. 155.1 58.01 1 0.97
Rect dealing date January 15.
Linyds Treat Gir. 155.77 10103 12.00 Lloyds Bank International, Geneva M & G Serostp
Trace Quelys, Tower Hill ECORODG. 07-626-4558
Authorite Jun. 2 9052-54 3111
Aust, Er. Jan. 3 9052-52 2279
Golder Acc. Jun. 3 9059-66 1078
Stand 1178
Accum Units) 1891 205.61+1.5 387 Samuel Montagu Ldn. Agents Samuel #100 Lan. Agents
114, 0fd Broad St. E.C.2

Apolio Fe Dec. 29 Septem 44.30 15.20

Apolio Fe Dec. 29 Septem 44.30

Apolio F m-service Marray, Johnstone (Inv. Adviser) 163 Rings St., Glasgow, C2. O61-221-521-163 Rings St., Glasgow, C2. O61-221-521-163 Rings St., Care St., C Negit S.A. Quest Fund Mingmint. (Jersey) Ltd.

> Pathschild Asset Management (C.I.) : 01-248 3999 P.O. Box 58, 5t. billians Ct., Gue
> 01-248 3999 P.O. Box 58, 5t. billians Ct., Gue
> 01-12 427 O.C. Eq. Fr. Dec. 29... 152.6
> 439 O.C. Inc. Fd. Jan. 2 152.8
> 439 O.C. Inc. Fd. Jan. 2 152.8
> 430 O.C. Inc. Fd. Jan. 2 152.8
> 431 5.23 O.C.Sm Co. Dec. 29... 132.0
> 431 5.23 O.C.Sm Co. Dec. 29... 132.0
> 431 5.23 O.C.Sm Co. Dec. 20... 132.0
> 431 5.23 O.C.Sm Co. Dec. 20... 132.0
> 431 5.24 O.C. Decentry 134.50
> 450 Dec. 12 Dec. 14. Next of the control of the con Royal Trust (C.I.) Fd. Mgt. I.tr. 0534 2744

Richmond Life Ass. Ltd. -

0624 23914

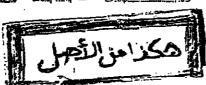
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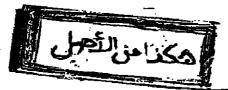
J. Henry Schroder Wagg & Co. Ltd.
120, Cheapside, EC2. 01-588 4000
Cheap S Jan. 4 1161 F-0.10 2.76
Frafatar Nov. 30 SUS123.16
Asian Fd. Dec. 27 SUS18 70 19.19 267
Appen Fd. Jan. 2 SAL 96 2.08 2.08
Logan Fd. Dec. 28 SUS843 9048 033 Singer & Friedlander Ldn. Agents. 20, Canron St., EC4. 01-248 9646 Dekatoris 07:80 4.12 Tokyo Tsi. Dec. 27 50540 50 1153 Surinvest (Jersey) Ltd. (x) TSB Unit Trust Managers (C.I.) Ltd:
Bagatele Rd, St. Savjour, Jersey.
Jersey Fund 485 51.0 471
Guerney Fund 485 51.0 471
Prices on Jan. 3. Next sub. day Jan. 9. TSB Gilt Fund Managers (C.I.) Ltd. Baquielle Rd., SL Saviour, Jersey. 0534 73493 Grit Fund 99.0 102.01 12.36 Git Fond (Jsy.) 99.0 102.01 12.16 Prices or Jam. 5. Next sain. day Jan. 10 Tokyo Pacific Holdings N.V.

Intimis Management Co. N.V., Caracao. NAV per share Dec. 11. SUS64.84. Tokyo Pacific Hidgs. (Sesheard) N.V. Inims Management Co. N.V. Curacoo. NAV per there Oct. 11. SUS47.25. Tyndall Group P.O. Box 1256 Hamilton 5, Bermoda, 2-2760

Union-investment-Sessischaft unbliPostlach 16767, D 6000 Franker 16.
Allantischunk 11.25 11.90(+0.20) 12.
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Unippetia United States Tst. Intl. Adv. Co. World Wide Growth Managements

NOTES





USINESSMAN'S DIARY

UK TRADE FAIRS AND EXHIBITIONS

(Westridge 54511) (until Jan. 14). Holidays 79 Camping Outdoor Holiday Exhibition Olympia and Motor Caravan Show (01-262 2886) (until Jan. 14) Model Engineer Exbn. (Hemel Hempstead 63841) (until Jan 13) Racing and Sporting Motorcycle Show (01-226 7901) (untH Jan 14) BFM Furniture Show (01-724 0851) (until Jan. 10) urrent New Year Gifts, Jewellery and Leathergoods Trade Fair (061-969 3103) (until Jan. 11)
International Toy Fair (01-226 6653) Stationery Industry Exhibition—STATINDEX (01.580 9258) an. 14—17.

—IDEA (01-486-1951)

London International Boat Show

V. cmbley Conference Centre Horticultural Halls, SW1 National Exhibition Centre, Birmineham Belle Vue. Manchester

Exhibition Centre, Harrogate Grosvenor House, W1 Micro-Electronics for the TV Industry—TV-MEX National Exhibition Centre, (01-486 1951)

Birmingha Birmingham International Domestic Electric Appliances Exbn. National Exhibition Centre, Birminghan

),	VERS	EAS TRADE FAIRS AND	EXHIBITION
	rent	Hotel and Restaurant Industry Fair-HORECAVA	Amsterdam
ın.	10—14	(01-228 2880) (until Jan. 11) Home Furnishing Textile Fair (01-734 0543)	Frankfurt Paris
311. 311.	18—21 .	Intl. Trade Fair, Motor Workshop and Casonine	Salzburg
	20—28 22—27	International Boat Show—BOOT (01-409 0956) International Audiovisual & Communications Show	Dusseldorf Paris

INDEED AND MANAGEMENT CONFERENCES

	BE	SL	NES	S AND MANAGEMENT C	ONFERENCE
	11776	mf -	- <u> </u>	BACTE: Producing Training Packages (01-636 5351)	Shillingford Bridge Hotel,
				(until Jan. 12) Institute for Intal. Research Currency Briefing	Hyde Park Hotel, SW1
	au.			Seminar (01.388 2863) Leeds University: Traffic Data Collection (Leeds	
					Leeds University
	an.	8—9		Reading University: Small scale energy for developing countries (Reading 85123)	Reading University
•;	an.	8—F	eb. 2	Urwick Management: management for the 194117)	Urwick Management Centr Waldorf Hotel, WC2
	an.	10 10—1		BCPA: Selection and Interviewing (01-405 1023) IPM: The Secretary in Personnel Management (01-387 2844)	Whites Hotel, W2
٠.	an.	10—12	2	Wanagement Centre Europe: Seminar on Lieutronic	Brussels
	an.	11		AGB: Detection Devices (01-353 3651)	London venue disclosed w booking
				C and CA: Concrete in Hot Climates Admixtures and Curing (Fulmer 2727) Leeds University: Transport and the Inner City	Fulmer, Slough
	ian.	13 .		Leeds University: Transport and the Inner City (Leeds 35036)	Leeds University
		•	9 9	RRG: Risk Management in Practice—Study Course (01-236 2175) TOW Advanced Interviewing and Assessment	Tower Hotel, E1 Highgate House, Creaton, Northam
			9		Management Centre, Brad
			9.	Bradford University: Managing Management	Heaton Mount, Bradford
	Tan	15—1	6	Philip Thorn Associates: Legal and Banking Environment for Foreign Banks in U.S. (Guildford 71986)	Cafe Royal, W1
-	lan.	16		IPS: Industrial Fasteners—How to get value for	Kensington Close Hotel, V
•			7	CCC: Expediting Successful Claims in Construc-	Europa Hotel, W1
÷	Tan.	16—1	7	ASM: Practical Aspects of Work Study—Method Study and Work Measurement (01-385 1992)	RAC Club, SW1
	Jan.	17		The Henley Centre for Forecasting: Forecasts for Corporate Plans to 1984 (01-251 3841)	Carlton Tower, SW1
		18		BAEC: Export Finance, Export Services and the	Carlton Tower, SW1
	Tan.	18		David Casey Associates: Management and the Law	Holiday Inn, Langley
	Jan.	18		Duilding Advisory Service: Philip Overseas	
-	:			Markets for Construction and Components Eastern Europe, South Korea and South	Cavendish Centre, W1
	lan.	18		AGB: The Discrimination Laws Opportunities, Pay and Pensions (01-353 3651)	Café Royal, W1
1	<u>.</u>		· . · .	na di Maria di Salata di Langua	

llingford Bridge Hotel, de Park Hotel, SW1

eds University ading University rwick Management Centre aldorf Hotel, WC2 hites Hotel, W2

ondon venue disclosed when booking ulmer, Slough

Northampton anagement Centre, Bradford

afe Royal, WI ensington Close Hotel, W8

Motor Industry Surveys

The motor industry is facing massive reorganisation both in the U.K. and throughout Europe. The results of this reorganisation will in the long term have the effect of making vehicle production an area with far more international co-operation.

The Financial Times maintains a close watch on all aspects of the motor industry and a part of this coverage are the surveys which deal in detail with specific areas of the industry.

1979 will see this interest in the Motor Industry continuing and expanding. Below are listed the tifles and provisional publication dates for motor Industry, and related surveys in the Financial Times.

Tyres March 9 Specialist Cars March 29 Fleet Management and Financing April 30. **European Vehicle Components** June 6 Vans and Light Trucks July 18 Commercial Vehicles September 24 European Motor Industry October 16

> For further details of these Surveys Advertising Rates and Editorial Synopses please contact:

Richard Willis Bracken House, 10 Cannon Street, London ECAP 4BY Tel: 01-248 8000

The content and publication dates of Surveys in the Financial Times are subject to change at the discretion of the Editor.

WEEK'S FINANCIAL DIARY

The following is a record of the principal business and financial engagements during the week. The Board meetings are mainly for the purpose of considering dividends and official indications are not always available whether dividends concerned are interims or finals. The sub-divisions shown below are based mainly on last year's limetable.

WEDNEDAY, JANUARY COMPANY MEETINGS ydesdale inv., 1/2. v. servers states inv., 1/2. winchester House. 100. Did Broad Street. E.C., 10.05. omportex. Wantbester House. 100, Old Broad Street. E.C., 12. 12. ilcoville. Winchester House, 100, Old Broad Street. E.C., 13.30. BOARD MEETINGS— H.). Queens Hotel. Leeds and Tawse DIVIDEND & INTEREST PAYMENTS Canack Chas: 7'apc Bos. 10179
£3.6796
6340 Morpeth 7'apc Bds. Red. 18/179
£3.6796
647 Apc Bds. Red 10'179 £3.6796
Gateshead 7'apc Bds. Red. 10'179
£3.6796
Glasgow 7'apc Bds. Red. 10'179 £3.6796
Glasgow 7'apc Bds. Red. 10'179 £3.6796 A 2.6879 (inc. supp. 10-179 53-6796 Howard and Wyndham Ord. A 0.3359 Iroland 7:spc 1981-83 3:spc London County 6:spc 1988-90 3:spc Rotherham 7:spc Bds. Red. 10:179

Rotherham 71spc pos. 155,6796 Rushmoor 71spc Bds. Red. 10179 THURSDAY, JANUARY 11 COMPANY MEETINGS COMPANY MEETINGS—
Britch Sugar Corpn. Hyde Park Hotel,
S.W. 12.
Comet Radiovision Services, King Charles
House. George Street, Hulf, 12.
National and Commercial Banking, N.
British Hotel, Edinburgh, 12.
BCARD MEETINGS—
Interiors:

Stockholders Inv. TSS 1.359 Stockholders Inv. TSS 1.359 Surrey Var. Rate Bds. Red. 61.82 45.6563 Tweeddele Slog Bds. Red. 61.82 41 sec Whithread A B Ord. 1.3214p (anc. supp. dist. of 0.0423p 25.2/78) Yarrow 2.45p

FRIDAY, JANUARY 12 COMPANY MEETINGS— Carr's Milling Inds. Crest Motel, Kings town. Carlisle. 11.30. Construction Higgs. 124. Chancery Lane

DIVIDEND & INTEREST PAYMENTS DIVIDEND A INTEREST PAYMENTS— Castlepoint 100c 86s. Red. 18/7/79 5pc Crapper Lamest 19 Crosby Spring Interiors 0.239560 Eagle Star Insur. 3.3974p (Inc. supp. dist. of 0,0474p 1977) Carly (Charles) and Marriott (Witney) 6pc 31, 2.10c 10pc Bds. Red. 187:79 Spc. Mahon Ln. 30c

Valley 12sc Bds. Red. 77/82 5pc SATURDAY, JANUARY 13

DIVIDEND & INTEREST PAYMENTS-Hammersmith 15 hope 50 SUNDAY, JANUARY 14

CONTRACTS

Defence orders for Racal receivers

Bracknell-based communications systems company, has been awarded orders worth almost substantial quantity of communiprogramme by the Royal Air Force and involve the supply of Racal's most advanced remotely operated and programmable communications receivers.

CHRYSLER UNITED KINGDOM has won an order worth nearly £3.25m from Swan National Rental for 500 Horizon 1.3LS and 500 Alpine 1442LS models for its hire fleet:

Al £190,000 contract for the design, construction and installation of a dirt disposal conveyor and bunkering system at
Creswell Colliery has been
awarded to CRONE AND
TAYLOR (member of the Worsley Group).

An order worth £611,000 has been placed with the Poole-based combustion division of Hamworthy Engineering, a Powell Duffryn Company, for three air heaters and ancillary control and other equipment for new pulp

RACAL COMMUNICATIONS, the drying plant at the British Sugar Corporation's sugar beet processing centre at Bury St. Edmunds, Suffolk. The plant is due to go into operation next September (Procurement Executive) for a and will be used for processing the puip which remains after the cations receivers. The orders are sugar has been extracted. A part of an extended purchasing drier modernisation programme is also being carried out and a further order placed with Hamworthy is for a similar drier to replace an earlier model at Wissington, Suffolk.

> The BBC has awarded £50,000 contract to the transmission division of PLESSEY TELECOMMUNICATIONS TERNATIONAL at Beeston, Nottingham, for equipment roviding private telecommunication links between London and four of its main broadcasting centres in the UK. The channeltranslating equipment, which will be used over the Post Office's 48 kHz wide-band circuits, will be installed in late 1979. It will be put in Broadcasting House in London and BBC centres at Birmingham, Glasgow, Belfast and Milton Keynes and will establish 24 speech circuits between London and Birmingham. 12 between London and Belfast, and 12 between London

and Milton Keynes.

C.IVI.II.

"Satisfactory results in view of prevailing economic circumstances"

reports Norman Hickman, the Chairman

Despite not being able to improve on last year's record profit, it is felt that the result is satisfactory in view of the prevailing economic circumstances. Pre-tax profits were £3.729 million, as compared with £3.945 million for the previous year. An interim dividend of 1.5p per share was paid on 4 July 1978 and the directors recommend a final dividend of 1.5p per share payable on 5 February 1979, on the enlarged share capital following the recent successful Rights Issue. The group's turnover rose 6.6 per cent with all divisions trading well and competing vigorously for the available orders. The Industrial Services division was the most profitable, the Metal Processing division showed higher profits from a lower turnover, whilst the Steel Stockholding division increased sales by some 8 per cent notwithstanding the worldwide recession in the demand for steel. The Rights Issue last June was successful and raised almost £1.5 million after expenses, with our shareholders taking up 93.6 per cent of the issue. The capital expenditure programme is well in-hand and will contribute to the development of the group.

While the economic outlook is uncertain, the group is well placed to maintain its expansion in the foreseeable future and demand for our products, particularly industrial services, in the current year is continuing to improve.



Industrial Services

The division had a record year. but increased overheads held profitability to around the previous year's level. Sales of safety equipment and protective clothing achieved a record year, with considerably increased turnover.

Metal Processing

The year under review started badly, with trading conditions in the industry continuing to worsen and demand at a very In the latter half of the year conditions improved considerably

and demand became strong for good quality metal scrap. This trend has continued into the current year.

Light Engineering

Despite a higher turnover from the division, profits were below the previous year's due to mixed results from the various companies. One bright spot was exports which improved and have increased further in the current year. Order levels remain high and the division looks forward to even better results in the

for the year to 31 July 1978. Copies of the full

Secretary, The CMT Group, Halesowen Road,

Report and Accounts are available from the

Dudley, West Midlands DY2 9NR.

The above text is an extract from the Annual Report

Steel Stockholding

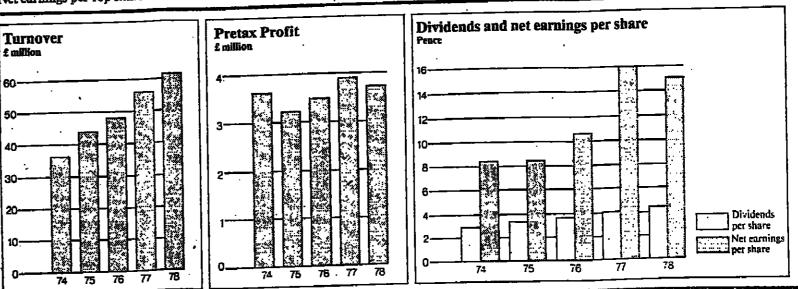
Considering that this was the fourth year of the acute recession in the steel industry, the Steel Stockholding division traded well. especially in the second half. Fluctuations will remain until industrial demand for all types of steel increases, but we feel that the division has not yet demonstrated its full potential. The new financial year has started well.

Tubes, Fittings & Forgings

The present phase of rationalisation in this division is almost complete and the additional plant has resulted in increased production capacity. Home and export markets have shown further sales increases, but margins for certain products have been under severe pressure. In spite of adverse trading conditions, profits, although lower than last year, have been maintained at a reasonable level and we are confident that further expansion will be

The year in brief	1978	1977
Earnings for shareholders	£3.640m	£3.652m
Cost of dividends	£0.680m	£0.503m
Profit retained	£2.961m	£3.149m
Shareholders' funds	£24.632m	£20.197m
Ordinary dividends—actual per share	3.0p	2.66p
Net earnings per 10p share	15.3p	16.0p

Divisional analy	ysis of re	suits		
Industrial services Light engineering Metal processing Steel stockholding	Sales 1978 £000 23,592 4,895 8,632 17,959	Trading profit before interest 1978 £000 2,112 351 149 947	Sales 1977 £000 20,495 4,200 10,678 16,624	Trading profit tefore interest 1977 £000 2,135 376 148 1,069
Tubes, fittings and forgings	5,016 60,094	$\frac{813}{4,372}$	4,320 56,317	$\frac{876}{4,604}$



The Central Manufacturing & Trading Group Limited

34 INTERNATIONAL FINANCIAL BULLETIN A quarterly source of fiscal, financial Churcope 150 per year. Elsewhere 152 per year.
(Armail 255 per year).
(Armail 255 per year).
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BONDS & RAILS—Cont. BRITISH FUNDS "Shorts" (Lives up to Five Years) 9913 951 **AMERICANS** E to Gross C'er Gr's Stock 165, 3111 \$1.00 59, 159 55, 333, 311 \$2.20 21 5 29.12 \$1.60 21 1 40 29.12 \$1.60 227, 111 44c 147, 711 \$1.0 75, 411 \$2.56 My Au N.F.

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My A. S. Five to Fifteen Years Over Fifteen Years 158 % % 95.1 150 % 163 311 51.60 — 4.9 13 2610 51.40 — 5.4 393 711 52.00 — 26 887p 519 30c — 1.7 Woodworths \$312. Xerox Corp. \$1.... Zapata Corp. 25c. Undated S.E. List Pre **CANADIANS** INTERNATIONAL BANK 15A.|5pc Stock 77-82 | 811₂ | 7.7| 6.14 | 11.36 **CORPORATION LOANS** 51.14 | BANKS AND HIRE PURCHASE | Street | St BANKS AND HIRE PURCHASE Stock Price & Net C'er Gr's P/S **LOANS** Public Board and Ind. 58 | 112| 8.63 | 12.20 501 | 13| 11,13,04 | 13.50 271 | 16| 11.33 | 13.08 123 | 13,11 | 7,31 | — 2812 | 13,11 | 16,17 | 13.10 FOREIGN BONDS & RAILS Last Div & Red. el Gress Yield Pnce £ 23 39 98 21 35 191 415 412 73.10 — — 412 FINANCIAL TIMES PUBLISHED IN LONDON & FRANKFURT Head Office: Bracken House, 10, Cannon Street, London EC4P 4BY Telex: Editorial 886341/2, 883897. Advertisements: 885033. Telegrams: Finantimo, London. Telephone: 01-248 8000. Frankfurt-Office: Frankenallee 68-72, 6000 Frankfurt-am-Main 1. Telev: Editorial 416052. Commercial 416193. Telephone: Editorial 7598 234. Commercial 7598 1 INTERNATIONAL AND BRITISH OFFICES EDITORIAL OFFICES Manchester: Queen's House, Queen Street. Telex 666813 Tel: 061-834 9381 Moscow. Kutuzovsky 14, Apartment 1, Moscow. Teler 7900 Tel: 243 1635 Birmingham: George House, George Road. Telex 333650 Tel: 021-454 0922 New York: 75 Rockefeller Plaza, N.Y. 10019. Telex 66390 Tel: 1212) 541 4625 Paris: 36 Rue du Sentier, 7502. Telec 220044 Tel: 236.57.43 Bonn: Presshaus 11/104 Heussallee 2-10. Teles 8869542 Tel 210039 Brussels: 39 Rue Ducale. Telex 23283 Tel: 512-9037 Carro: P.O. Box 2040. Tel: 938510 Rio de Janeiro: Avenida Pres. Vargas 418-10. Tel: 253 4848

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CHEMICALS, PLASTICS-Cont. BANKS & HP—Continued Oec. Do FialGNBr.LL.
Imp. Chem. £1...
Imp. Chem. £1...
Aug. Do. 57% Pf. £1...
Aug. Jint. Paint
Nov. Laporte Inds. 50p.
July Leigh Ints. 5p...
Mar. Norsk.H. Kr. 80 ...
July Physr 10p...
Sept. Rassom Wm. 10p.
Nov. Rentokii 10p...
Nov. Revertex ...
Nov. Revertex ... Hire Purchase, etc. DRAPERY AND STORES Feb. Ang. Cattle's (Hdgs) 10p 36xt 21 thd1.86 2.0 7.7 9.7 May Cie B cre Fr.100 578 155 012% — 1.9 — Credit Data 10p 8 155 012% — 1.9 — Credit Data 10p 8 155 012% — 1.9 — 6.0 ф 1.0 m 1.0 BEERS, WINES AND SPIRITS Nov. Cardors' A 20p
Dec. Casket (S.) 10p
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July Cope Sports 5p.
Cornell Dress 5p.
Nov. Courts' A'
Sept. Currys
Jan. Customagic 10p
July Debenhams
Nov. Dewrite's 10p.
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Nov. Enis & Gold 5p.
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June Alicia Pack 1Dp.
Sept. All'd Colland 1Dp.
Sept. All'd Colland 1Dp.
Nov. Anchor Chem.
Nov. Bayer AG. DM 504
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July Brent Chems. 1Dp.
Sept. Brn. Bercol 10p.
July Burrell 5p.
July Carless Capel 10p.
May Catalin.
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July Coates Bros.
ENGINEERING

MACHINE TOOLS

ENGINEERING—Continued May Brasway 10p ...
July Brouse Dud. 10p
July Brouse Dud. 10p
July Brouse Dud. 10p
July Bristol Chammel.
Oct. British Northrop
Aug. Brit. Steam 20p
Jan. Brockhouse ...
Nov. Brom's Cast 5p8.
May Brom's Cast 5p8.
May Bronk Eng. 10p
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July Downiebrae 10p.
July Downiebrae 10p.
July Downiebrae 10p.
May Ductife Steeks.
Dec. Duport
Oct. Edbro (Hidgs)
Oct. Elliott (8.)
Aug. Eva Industries
Oct. Expanded Metal
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Firth (Gid) 10p
Aug. Folkes Honny 5p
June Farnis Inds
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Aug. Gen. Eng. Rad. 10p
Aug. Gen. Eng. Rad. 10p
Aug. Gener's Econ.
Jan. G.K. N. El.
Jan. G.K. N. El.
Jan. G.K. N. El.
June Haden Carrier
Oct. Hall Eng. 50p
July Hall Matthew
Sept. Hallite 50p
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Mar. Howard Machy.
Oct. Howelen Group
May Hunt Moscrop 5p
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Oct. J. M.
Jenses & Cattlell
June Jones Group 10p
Oct. Jones Sibpman.
Nov. Laird & Elifot.
May Lair & Elifot. 78 35 5.40 - 0.8 - 0.9 -Lloyd (F.H.).....
July Locker (T) 5p...
July Do. 'A' 5p...
Sept. London & MicYu',
Nov. M.I. Holdings ...
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June Martonair 20p.
Jan. MicKechnie Bros...
Apr. Megaltt 5p.....
Apr. Metalrax 5p....
July Midland Inds. Sp.... Feb. June
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Financial Times Monday January 8 1979 FOOD, GROCERIES-Cont. June Spillers

Apr. Spairrel Wn 128 p
Sept. Stocks (Joseph)
Apr. Trate & Lyle £1.

April Tavener Rut. 20p
Sept. Tesco 5p
Oct. Unigate
Lune Unified Biscuits.
Mar. Watson Phip. 10p HOTELS AND CATERERS INDUSTRIALS INDUSTRI
Oct. IA.A.H.
June AGB Research.
Apr. Jacobs Bras. Ilip.
Oct. Abbey Ltd.
Dec. Aron & General
Oct. Airfix Inds. 20p
Dec. Alphoe Hides. 5o.
May Am. Asphalt
Dec. Arenson (A) 1.0p.
Oct. Assocd. Comus 'A
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Nov. Assis F (Ley) Ilip.
Jan. Awon Rubber £1
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Oct. BOC Intni.
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140 | 18.1 | 060c | \$\phi\$ | 26.0 | 12.4 | 0.57 | 7.2 | 7.1 | 7.0 | 12.74 | --- | --- | 30 | 16.10 | 09c | 1.5 | 21.8 | 111₂ | 1174 | --- | --- | --- | --- |

Financial Times Monday January 8 1979 INDUSTRIALS—Continued Serving the world with financial expertise. MINES—Continued **AUSTRALIAN** MOTORS, AIRCRAFT TRADES SHOES AND **GOLDS EX-\$ PREMIUM** TEXTILES

TOTAL STATE OF THE PROPERTY OF THE P THE CONTROL OF THE CO Apr. Sept|Lunuma £1........ 232 | 133|5.58 | 1.5| 3.6 | Carry | Carr O.F.S.

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22 Brit. Petroles.
Barrach Oli Charterhall Shell



FINANCIALTIMES

Monday January 8 1979



U.S. oil companies 'charged \$1bn too much'

By David Lascelles in New York NINE of the largest U.S. oil companies have been accused by the U.S. Energy and Justice Departments of overcharging their customers by at least \$1bn.

The accusation is contained in a suit filed on Friday in the District Court in Washington and marks the latest stage in the authorities' campaign to clear up what they allege to be the oil companies illegal charging practices since the 1973 Arab oil embargo.

The suit names the three largest U.S. oil companies— Bxxon, Mobil and Texaco—as well as Gulf, Amoco, Atlantic Richfield, Shell, Phillips and Cities Service.

Specifically, it alleges that they breached Federal energy pricing regulations by overcharging on natural gas liquids. The suit claims that the companies inflated gas prices in dealings among their subsidiaries, and set an artificially high market value on the gas

they bought. The two U.S. Government departments ask the court to order the companies to pay refunds plus interest and penalties. Since the alleged overcharging totals \$930m (\$316m against Exxon alone) and investigations are continuing, the Energy Department said that alleged viola-"will certainly exceed Slbn without addition of interest and assessment of possible penalties."

Three of companies accused -Mobil, Texaco and Cities Service-quickly issued statements denying the allegations. The other companies are expected to follow suit, The companies' main contention was that they had done their best to comply

with what were extremely complex and frequently conflicting price regulations.

The U.S. Energy Department said that the latest suit brings to \$2.2bn the total over-charges involved in the campaign it launched in

September, 1977. Last year in separate suits, in extracting refunds from Conoco and Aluminium industry attacks BL £25m foundry scheme

BY ARTHUR SMITH, MIDLANDS CORRESPONDENT

within the private aluminium able.

companies.

The association has made heads by 1987. strong representations to the National Enterprise Board, the Department of Industry and Mr. Michael Edwardes, BL chair-

Industry sources say that over- treated sceptically in the in- The facility is planned to capacity exists. New facilities dustry, and there are fears that begin regular production 27

£24.7m aluminium foundry in in the private sector and Leeds. The plan, announced last night, provoked angry reactions cient to make the project profit-

Mr. Peter McGrath, chairman The Light Metal Founders' and managing director of Association said vesterday that the move might jeopardise \$\frac{1}{2}\$ Element of Element of the move might jeopardise specialised capacity within the industry is inadequate to cope with BL Cars' plans almost to Midlands, and threaten several double aluminium requirements for engine blocks and cylinder

> Assurances have been given that by that date BL will still be meeting two-fifths of its block and cylinder needs from private companies. Such forecasts are

cent spare capacity. BL has attempted to get the

private sector to participate in the project, but it is believed that talks with Birmid Qualcast have made little progress.

However, Mr. McGrath said that the company was "still seeking a partner to strengthen British representation in this growing industry. The project, scheduled for a 25-acre site at West Yorkshire Foundries, Leeds, will double

BL's aluminium casting capacity

to 13,000 tonnes. The facility is planned to

BL COMPONENTS is to build a could be provided more cheaply the new foundry will add months from the start of con-fig. The plan appropried last demand is likely to be insufficent spare capacity.

BL COMPONENTS is to build a could be provided more cheaply the new foundry will add months from the start of con-struction and to provide emthe same number working in aluminium foundry

> Mr. McGrath said that output a head should be doubled by 1983 and there would be further improvements in subsequent

The company has indicated to the trade unions that it will be necessary to_close the Courthouse Green Foundry, at Coven-try, and the Number 8 foundry Leeds. Further cuts will depend upon efforts to find new A sales delegation has visited

Bow Group warning Page 4

Enterprise Board back plan to finance dealers

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

being set up to provide finance deposits.

for distributors and dealers of BL distributors have been for distributors and dealers of BL cars.

The scheme will enable miluse the cash more profitably. At and is almost universal in the present they receive a token 1 U.S. for financing dealers' car per cent on their money.

Dutton-Forshaw Group estimated yesterday that it would get back about £3m from BL. Another big distributor. Mann Egerton, said that it would have about £3.5m to use for other purposes if it took advantage of the new scheme.

ject, put together by the enter-prise board with the assistance of N. M. Rothschild, merchant bankers should be made tomorrow. It might be formally launched by the end of this month.

Dealers now have cash on money we have tied up on deposit with BL Cars, the deposit with BL Cars."

amount based on a percentage The scheme would help big

AN IMPORTANT role is to be when car prices have risen played by the National Enter- rapidly and they have been prise Board in an organisation called on to "top up" their bulk

The scheme will enable mil-lions of pounds on deposit with The arrangement has been BL Cars to be released to used successfully by most dealers who should be able to importers of cars to the UK

'Challenge'

Colonel Charles Gray, deputy

chairman and managing director of Dutton-Forshaw, said yesterday: "The money will be offered at a commercial rate but it will not be expensive." Finishing touches to the project, put together by the enterprise board with the assistance sidy for BL "The financing shares in it."

Mr. James Campbell, chairman and managing director of It will involve a new organisa- Mann Egerton, said that the tion. Wholesale Motor Finance, proposed system would "proproviding credit for BL car vide us with a challenge to use now speak with one voice for dealers to finance their stock, much more effectively the all Austin Morris and Jaguar

The Enterprise Board is panies."

expected to take a 75 per cent shareholding in Motor Finance. Dominions Trust, the finance house, will probably have 5 per cent and the Post Office Pension Fund about 7 per cent. The Coal Board Pension Fund might take 7 per cent, but that

has still to be agreed.

The appearance of the new organisation will relieve BL Cars of the administrative bur-den involved in dealer finance without damaging its cash flow. Japanese importers.

Meanwhile, the two previopsly separate dealer and distributor separate dealer and distributor councils representing Austin Morris and Jaguar Rover Triumph vehicles have merged into one new council, representing more than 2,000 outlets for BL Cars.

Mr. Ron Carbutt, chairman of

the new council, said: "We can now speak with one voice for Rover Triumph franchise holders and make a more coof forecast sales. The system distributors by providing stock success of our only major has caused severe difficulties to funding off the balance sheet. British owned motor comordinated contribution to the

UK wins Chinese plastics plant order

A SECOND UK process plant manufacturer has made an important breakthrough in China winning a contract to build a

The contract for the construc-

The order for a 140,000 tonnes a-year high density polyethylene plant is worth about £26m and

The deal results from two months of intensive negotiations in Peking. John Brown will carry out engineering, supply, supervision of construction and commissioning as part of China's rapid expansion of its

chemical industry.

Generally the UK process plant industry has not yet met with as much success in China as its competitors, particularly West Germany and Japan. Davy Powergas made the first breakthrough last August when it was awarded a £36m contract for the construction of two oxo-alcohols

petrochemicals plant.

tion of a plastics plant has been awarded to Constructors John Brown in the face of strong com-petition from Uhde-Hoechst of West Germany and Mitsui of

BL has been looking the methods of improving morale among the dealership network more than 60 per cent of the equipment will be procured in

Government's share of the North Sea bonanza would ever be used simply to help balance the Bud- one year to the next.

Weather

THE LEX COLUMN

Gilts and the White Paper

week's Last attempt by equities to start 1979 20% on a bright note failed to generate any echo in the long end of the gilt-edged market. The fears of a winter of damaging labour disputes are rapidly being borne out, and estimates of the likely inflation rate for the year are gradually. being edged upwards.

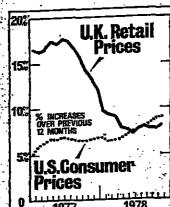
The first economic milestone of 1979 will be the publication of the public spending White Paper—approved by the Cabinet before Christmas, and likely to be released around the middle of January. There is no great mystery about the size of public spending plans for 1979-80, which are likely to envisage growth of a little more than 2 per cent compared with the current year. This is well recognised already within the City, and partly explains why brokers are making nervous noises about next year's public sector borrowing requirement, But there remain two aspects of the White Paper which are

One fear is that the 2 per cent rise could, in some way, be misleading. Memories are fresh of last year, when a similar modest increase was claimedbut turned out to be based upon the planned outturn for 1977-78, Since the Government had substantially underspent in that year, the planned increase on actual spending was much greater—of the order of 6 per cent. This year, public spending has been close to plan (some fear that it has in fact been above target) so there should not be room for such discrepancies. But there remains a nagging anxiety that in an Election year the figures may be

being keenly awaited.

sight.
The second problem is more fundamental—it concerns the medium-term prospects for public spending. The White Paper itself will apparently include a discussion of exposure draft on inflation the likely economic back, accounting replacing the origi-ground over the next few years, nal draft on general purchasing a period when Government revenue from the North Sea will be building up rapidly. The question is whether the buovancy of revenue will be used to boost the rate of public spending growth, rather than sure draft will, propose two cut the deficit—just as the alternative supplementary statethe oil is currently being used to sustain high consumer spending rather than the more noble

Paper last spring. Perhaps it was always figures (presumably tying in this double vision persisting unrealistic to expect that the with the SEC requirements) until users turn as a matter of



rather than for some politically more rewarding purpose. But now the gilt-edged market looks into 1979-80 and sees, even after several years of economic recovery, and in spite of nearly £1bn extra from the North Sea, a PSBR as large as a proportion of GDP as in 1978-79. This is assuming that the Government has the political will and Parliamentary power to index specific indirect taxes. The institutions are comfortably placed for liquidity and there is no implication at this stage that extra strains will be placed on the system. At the same time, there is an air of inevitability about where that cash will have

Inflation accounts Inflation knows few boun-

daries, and with it goes its fellow traveller inflation accounting. During the past few months the year on year rate of consumer price rises in the U.S. has been running above the UK level, which sets an worse than they look at first. appropriate background for today's press conference by the U.S. Financial Accounting Standards Board. This will prepare the way for the publication later this week of a new exposure draft on inflation

power accounting which was

scrapped when the Securities

and Exchange Commission in-

sisted on replacement cost dis-

closures by major companies. It seems that the new expo-

The Americans are thus following a cautious, flexible approach, as has the accounting profession in Britain following the demise of the exposure draft ED18 in 1977. Here, the Inflation Accounting Steering Group is also close to producing another exposure draft-which may see the light of day during the coming spring, although it has yet to be presented to the Accounting Standards Committee. The latter will be reluctant to promote anything which it sees as too ambitious or complex for the accounting profession to swallow.

Experience with the interim Hyde guidelines has been patchy. Among the largest companies—the top 100, say—more than half have followed the recommendations. But com-pliance has fallen away drasti-cally with size. Out of some 1,100 annual reports received by the LASG up to last November, only 40 per cent included a Hyde statement or something near it. Taking all listed companies—including a great many quite small ones—the rate of compliance has probably been under 20 per cent. However, companies would have to take a full standard

much more seriously than the present voluntary guidelines. The intention is to build on the guidelines so that annual reports will include a full supplementary CCA profit and loss account, together with a simplified balance-sheet. The other main step forward will be to refine the gearing adjustment, on the lines of the twotier monetary adjustment already pioneered by ICL An adjustment for monetary workcapital items perhaps limited strictly to debtors and creditors—will be made along with the existing depreciation and cost of sales adjustments before arriving at a so-called entity profit. There will then follow a second monetary or gearing adjustment to reflect the extent to which the impact of inflation on loan capital affects the level of profits

The ideas are promising, but progress is slow, and the accounting profession is conalternative supplementary state- demning itself and the public ments for U.S. companies (the to an indefinite period in which basic accounts continuing in listed company accounts contain historical cost form as before). two profit figures on the basis. They will be able to give GPP presumably, of two "true and information; or they will be fair" views. The IASG is able to present current cost resigned to the inevitability of with an overall GPP adjust course, to the CCA accounts ment to give comparability from first. Here, as always, the inflation rate must dictate the pace.

accruing to shareholders.

Continued from Page 1

Policy implications of lorry strike

Ministers, though the feeling was that the party's electoral chances were being severely damaged by the disruption caused by the disputes. This point is likely to be made

again when senior Ministers meet members of the TUC's Economic Committee on Thurs-

Ministers seemed to be trying to dispel any idea that the Gov-ernment would be panicked into hasty action. Mr. Rees repeated Mr. Healey's warning that if there was a pay explosion the the excess money back through monetary or fiscal measures. But he emphasised that such

a decision would be taken by the Chancellor, and as part of the Budget.

Mr. Roy Hattersley, Prices Secretary, and Mr. William Rodgers, Transport Secretary, are understood to have been in direct touch with officials of the Road Haulage Association, telling them that the present 15 per cent offers are them-selves too high and the association must casure that it does not go beyond them.

The association says it is

concerned that the Government will place a restraining order on charges made by road

hauliers.
The Government's power to use price controls as a means of penalising employers who pay above the 5 per cent guide-line are limited because of profit safeguards clauses in the

The lorry-drivers have submitted a claim worth 25 per cent in straight money terms, involving a rise in the existing basic rate of £53 for drivers of They want a shorter working in on "shortages," a spokes week, partly in an attempt to man said. protect earnings against cuts in overtime necessitated by EEC

Regional offices of the Ministry

Although the thaw is easing fall, he said. the pressure on fresh food supplies, the troubles in the road transport industry bave caused considerable confusion

This afternoon a senior delegation from the food manufacturing industry, including officials from the Food and Drink Industries' Council, the Brewers' Society and the Food Manufacturers' Federation, will call at the Ministry to brief officials on the threats posed by tion of fuel supplies and the spreading lorry drivers' strike.
The British Sugar Corpora-

tion is beginning to suffer. It said oil supplies had started to run out at some of its 17 fac-tories, which are at the peak of the sugar-beet refining season. The plant at Felsted, Essex,

has shut and production at key factories in Ipswich, Bury St. Edmunds and Ely is also Serious holp-ups damage prospects of a bumper home-grown sugar crop this year. About 1m tonnes of beet

are harvested and awaiting pro cessing. Sugar content may be seriously damaged if processing is delayed and particularly if the roots are frozen. The Milk Marketing Board is still fearful about the next week. Some 30 per cent of

national milk production—300m litres a day—is collected by contract hauliers who may be affected by industrial action. The rest is picked up by the board's own tanker fleet (40 per cent) and vehicles run by Unigate and Express Dairies

(30 per cent). The National Farmers' Union was almost cheerful about the prospects for fresh vegetable supplies this week. The shoppers' main problem in the next few days would probably the heaviest vehicles, to £65, be with profiteers trying to cash

Harvesting conditions had eased with the weather, and since a large proportion of home. Christopher Parkes writes: grown produce was shipped to market by farmers themselves of Agriculture will file regular or by farmer-owned co-situation reports to the White- operatives, supplies could be expected to improve and prices

So far the NFU, feed companies and some individual fariners have maintained deliveries to factories and farms, thanks in the food industry and a to ad hoc arrangements with measure of panic among con- local union branches and pic-

Germans near peace on steel

BY JONATHAN CARR IN BONN

THE WEST GERMAN steel ciation, have expressed confistrike may end on Thursday as the result of an agreement between employer and trade union representatives. But there are hurdles to be cleared before a return to work becomes

The complex accord reached after a 15-hour round of negotiations followed 41 days of strike-the first in the German industry for about 50 years. It covers more pay and free time, but its basis remains that of a 40-hour working week. that extent the key demand of the trade union, IG-Mctall, for a move towards a 35-hour week, may be seen by part of the rank and file as not fulfilled. But the union can argue that this move has been made through agreement on free shifts and extra holiday, even if it is not expressly acknowledged in the text. Josef Weisweiler, head of the

dence that the agreement will I is now up to the 124-

member main decision-making body of IG-Metall to pass judgment today on the accord. If it ended. decides in favour, a ballot among the union membership will begin immediately. The ballot is expected to end

by Wednesday. If only 25 per cent of those entitled to vote are in favour, work can begin again on Thursday morning. About 100,000 steel workers in the North Rhine-Westphalia, Osnabrueck and Bremen areas are not working, either because they are on strike or because they have been locked out by

the employers.

The cost of the stoppage is hard to assess. But the stell companies are thought so far to have lost close to DM 600m (£161m) and the union about Herr Eugen Loderer, chair DM 100m in strike pay. About man of IG-Metall, and Dr. Franz 1.5m tonnes of crude steel production was lost last month Iron and Steel Employers Asso- alone.

Vehicle makers-most recently Volkswagen-have said that they might have to introduce short time work from mid-January if the strike has not The accord covers a wage and

salary increase averaging 4 per cent, backdated to November 1 and running for 15 months. This matter was hardly in dispute. Further, from this year all

vals. Max. 6C. (43F.). S.E., Cen. S. England, Chan. Is. steel workers will gain two days extra holiday. Those who have to do night work will be given four free shifts and workers over 50 will gain a further two free shifts. In 1980, all workers will gain

another one day's holiday. And in 1981 night workers will be given another two free shifts and the over-50s one more free shift annually. Further adjustthe union will be able to claim that one of its long-standing aims, for all, has been achieved.

Company loans tax relief hint

BY DAVID FREUD

THE NEXT Finance Bill may contain tax relief for companies on taising loans and a relaxation in provisions covering interest on overdue tax.

A strong possibility in the Bill is further extension of the stock relief scheme introduced in 1974 after firm promises from senior Treasury Ministers. The scheme, which provides tax relief on increases in the nominal value of companies'

stocks, may also be adjusted to help small companies. Capital allowances for commercial buildings are a possi-bility, depending to some extent on whether Ministers find funds to finance them. Also on the cards is upgrad-

ing of status of the Special

Commissioners for Income Tax,

who hear the first stages of complex tax disputes. The Confederation of British Industry and the Consultative Committee of Accountance Bodies have argued strongly is charged on overdue income against non-allowance of busitax are likely in line with ness expenses, including cost of recommendations by the Select raising finance, known as "nothings."

They said that it placed British industry at a severe disadvantage to its foreign competitors, and inhibited setting-up on giving capital allowances to of new businesses, or expansion. new commercial buildings—
Business expenditure which something that a Royal Comdoes not qualify for tax relief mission first recommended in
against profits include cost of 1952. long-term finance; of setting up businesses, or expanding them; expenditure on

While changes in all these areas at the same time would overload the legislative space available But there is a strong likeli-

hood that costs of raising money will be made tax-allowable, as well as pre-trading expenditure that would be deductable if incurred after beginning trading; and some capital costs

period before interest is assessed be extended by six months. There could be some move The introduction of capital

allowances for hotels last year is seen as breaking the ice for projects that prove abortive; such a development, although and various types of spending the cost to the Exchequer could associated with closing of a cause delays.

Furniture trade in the doldrums Financial Times Reporter

BRITISH furniture makers are putting on a brave show this week at the Birmingham relating to waste and effluent disposal.

Changes in the way interest is charged on overdue income Exhibition Centre. But an examination of the financial performances of UK furniture manufacturers and distributers -published recently by Inter Company Comparisons-reports Committee on the Ombudsman. "alarmingly uneven" results in It recommended that the the furniture trade.



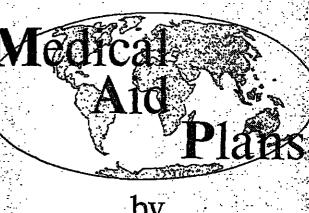
S. Wales
Cloudy. Rain. Hill fog. Max.
SC. (46F.). Lakes, Lo.M., N.E. England, Northern Ireland, Borders, S. Scotland Sunny intervals and showers

Shetland Sunny intervals. Snow on high ground. Strong winds. Max. Outlook: Cold. Rain. Snow in

Northern Scotland, Orkney and

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